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EDMUND RUFFIN, EDITOR AND PROPRIETOR.

TREATISE ON THE CULTURE OF SILK.

BY GIDEON B. SMITH.

[Supplemental to No. 2, published in the November number.]

After the cocoons have been properly cured, as described, either by baking or the application of heat in any other way, they should be spread out in a dry airy room, that the moisture of the chrysalis may evaporate, and should be thus kept till wanted for reeling or transportation. I have known cocoons to be ruined by the moisture of the chrysalis, when merely thrown into barrels and boxes. When intended for transportation, or to be sent to any distance, after they have been thoroughly dried, they may be put into barrels, boxes, or baskets, but must not be packed so as to *indent* the cocoons. The best way is, to fill the vessel, and gently settle them down, by shaking and slight pressure. If the cocoons are indented, they are very difficult to reel, and if flattened, they cannot be reeled at all; and, of course, are worthless, except for carding. In very damp weather, the room in which the cocoons are kept, ought to have a fire made in it to dry the air, and the cocoons should be stirred up, once a day, during the continuance of such weather; as they are very apt to absorb moisture from the atmosphere.

No. 3.

Reeling, twisting, bleaching, &c.

We have now arrived at the most difficult part of the whole business of silk-making, that of reeling the cocoons—without which all the previous operations will have been worthless. It is at this point that thousands of persons who have begun the culture of silk, under high hopes and expectations, have been arrested in their progress by what they called insurmountable difficulties, and abandoned the business in despair—there being, heretofore, no market for the sale of cocoons. In vain, have they been exhorted to persevere in the trial with patience and industry for a few days—in vain have they been told, that the devotion of one week's time and half a dozen pounds of cocoons, would be sufficient to teach them the art. The process seems so tedious, the result so trifling, that, after a few hours' trial, they give it up, and thus ends their career in the culture of silk. More than one thousand such instances have come under my immediate notice—I might, I am sure, say several thousands, including all with whom I have had intercourse personally, or by letter. Among them all, not more than one in twenty, have been induced to persevere, until they learned to reel at all, and not probably one in fifty until they learned to reel well. But for the encouragement of those who wish to learn to reel, I can and do assure them, that, when any intelligent persons have persevered for one week, they have invariably become expert reelers in that time, and many of them even in less time. Any person, therefore, that will devote one week, and five or six pounds of cocoons, steadily and perseveringly to the object, will be certain of accomplishing it. It requires almost Job-like patience, but patience was never better paid for. Let this be an invariable rule with all who would learn to reel: Take five or six pounds of cocoons, and set apart one week of time, with a determination to *waste* all the cocoons, if necessary, and to allow of no interruption, during the time, and then go a-head. If in two or three hours you find yourself making a good thread, all the better; but don't be discouraged if you presently find that thread becoming worthless from some cause or other, but take it off the reel, and begin anew. Who ever heard of a young woman learning to spin cotton, wool, or flax, even in one week's trial? Why, then, expect to perform a much nicer operation by *intuition?* Persevere, then, and you will learn. Perseverance, in a learner of reeling, is the great thing needful; and it is sure of its reward. Let me, for further encouragement, inform young beginners, that I have taught many persons to reel by writing one letter to them, describing the process. Many persons now maintain themselves by making sewing-silk, who never had any other instructions than these letters.

The REEL, most proper for the purpose, has heretofore been the one established by the Italian government, called the Piedmontese reel. Its construction is peculiar; and it secures several points deemed important in raw silk. By a peculiar vibration of a particular part, it lays the threads cross-ways in such manner as to prevent adhesion by means of the still wet gum. It reels two threads at a time, and they are so wound around each other in passing up to the bars of the reel, that they compress each other into a perfectly cylindrical wiry thread, without twisting—which is important, as the raw silk can then be used as flax, or twisted more or less to suit the various purposes for which it may be wanted. Our countrymen, however, seem to have abandoned, or rather rejected (for they have never used them much) these reels, and are using various kinds of new construction. Almost every person that has done any thing at all in making silk, has invented "a new reel"—a "new silk-reeler and twister;" a "machine to reel and twist silk at the same time," &c., &c. I am, however, very much inclined to the opinion, that for all commercial purposes, the silk must be reeled in a manner similar to that produced by the Piedmontese reel, and that, or some reel producing the same result, must ultimately be adopted by us. All staple articles of commerce must have some fixed character as a standard, all deviations from which deteriorate its quality. Silk reeled by the newly constructed machines will do well enough, and as well as any, for sewing silk, and for other manufactures at home, and in our own looms; but in the markets of the world at large, it must be of a character and quality to meet the expectations, and to conform to the customs of the manufacturers there. Why does the raw silk of China sell in Europe so much lower than that of Piedmont?

Simply because it is not reeled like the latter. I make these remarks, here, merely for the purpose of recording my opinion on this point, fully believing that the time will come, when all other reels and machines than that of Piedmont, or those producing the same results, will be abandoned in this country, except for domestic use, for which the newly invented machines are admirably adapted. The best I have examined is BROOKS'. They cost about $40, and can be obtained of the inventor, Adam Brooks, South Scituate, Massachusetts. Reels of the Piedmontese construction, can be obtained in Philadelphia, but I am not in possession of the address of the person who makes them at this time. They cost $15 to $20.

PREPARATIONS FOR REELING.—A small portable furnace, with some burning charcoal, is very useful for keeping the water hot, and should always be used. On this, place a copper or tin vessel, broad and flat, say six inches deep, 18 inches long, and 12 inches wide. Fill the vessel with hot water, not quite boiling, and put into the water two or three dozen cocoons, from which all the loose tow has been taken. With a small wisp of broom-straw, stir the cocoons about, occasionally raising the wisp to see if the end of a fibre has attached itself to it, and if such is the case, take the fibre in the left hand, and proceed again, as before, stirring the cocoons with the wisp, and securing the fibres in the left hand, until you have got fifteen or twenty; then attach them to the bar of the reel, and let an attendant turn the reel rapidly. Watch the cocoons carefully, so that you may observe if they *run* or unwind well. If you observe any of them drawn up out of the water, the water is not hot enough; if the fibres come off the cocoons in burs or clusters, the water is too hot. In the former case you must increase the heat of the water by pouring into the pan some boiling water; in the latter case you must cool it, by putting in cold water. The great difficulty, in reeling, consists in ascertaining the proper degree of heat of the water, required for different parcels of cocoons. Some cocoons require the water to be only of blood-heat; and others of all degrees from blood-heat to near the boiling point. But a little experience will teach the degree of heat required, so that the reeler will know in a moment whether the water is of a proper temperature.

When you have got as many fibres running on the reel as you require, you must still sit at the pan with the wisp, catching other fibres; for if the reel is turned with the proper rapidity, it will require you to be constantly attaching new fibres to supply the place of those that have broken, or exhausted cocoons. The fibres are readily attached to the thread as it is running, by merely throwing the ends of them on the running thread, which immediately adhere by means of the gum.

THE NUMBER OF FIBRES in the thread depends upon the purpose for which the silk is intended. For sewing-silk of ordinary quality, about fifty fibres may be reeled together; and then the threads will require to be doubled, so that from one hundred and fifty to two hundred fibres are contained in an ordinary thread of sewing-silk. For coarse broad goods, the same number may be reeled; but for the finer goods, gauzes, &c., five to ten fibres only, or for the finest, only two fibres are reeled together.

If the learner has followed the above instructions, he has probably been able to get quite a skein or hank of raw silk on his reel. I am sorry to disappoint him, but must tell him, it is good for nothing. I was desirous of enabling him to get the *knack* of catching the fibres; attaching them to the running thread; of learning the proper temperature of the water; and giving him a little experience in nearly *winding off* a parcel of cocoons, that he might become acquainted with the outlines of the art, and get the *use of his tools*. As said before, the silk reeled *merely* as above, will generally be worthless—it requires more care.

If the Piedmontese reel be used, two threads, of ten to twenty or thirty fibres each, are attached to the reel at the same time, and kept constantly of the same number of fibres. The proper number of fibres is obtained as before directed; brought together, drawn through the hand to clear them of motes and filth, and then drawn out to see that they run well; then pass them through the eye of the plate, pass the two threads three or four times round each other, separate them and pass them through the eyes on the vibrating bar, thence to the bar of the reel; as soon as they are attached to the latter, let the attendant turn the reel rapidly, and the reeler return to the pan to provide fibres for those cocoons that become detached or exhausted.

It will keep the reeler pretty busily employed in catching fibres, and dexterously throwing the ends upon the thread as it passes up, to keep the proper number of cocoons running in both threads. Keep a basket of cocoons by your side, and put in fresh ones to supply the place of those already in the basin, from time to time, as they are exhausted. Take care that there be not too many in the basin at the same time, nor too few; as in the former case, some of them will become too loose, and in the latter, the reel must stop till the fresh ones are soaked enough to run freely. Observe the following rules strictly: Whatever be the number of fibres you begin with, keep that number steadily in the thread, that it may be uniform and even; change the water as often as it becomes foul, and always use perfectly clear rain or river water, letting it stand for a time before use, that the sand, if any be in it, may settle before putting it into the pan. Well or spring water is generally too hard for the purpose. Avoid all carelessness and slovenliness—and remember that, CARE IS MONEY, in reeling silk. Let it be borne in mind, that the value of silk is increased or diminished by the manner in which it is reeled, very materially. One reeler will make his day's work in reeling worth five or six dollars, while another will only be worth two or three dollars, both reeling the same quantity of cocoons. Hence the value of care and attention. Attention to SMALL MATTERS, too, is here of the utmost importance. Indeed, the whole process is but a series of small, *very* small matters, no one of which can be neglected but at the expense of a material reduction in the quality of the silk. For example, if the water be too hot, the thread will be knotty, from the kinks or burs of the fibre that run up; if it be foul, from allowing the shells of the chrysalids to remain in it, the silk will be covered with motes; and if the number of fibres be not constantly kept the same, the thread will be uneven; all which deteriorate the quality of the silk, and therefore reduce materially the profit of the day's labor; but all which can be

obviated without difficulty, by strict attention. I need not harp upon this subject longer, I am sure. Those who will take the above advice will profit by it; those who will not, will be forced to adopt it by experience.

After an ordinary sized skein is wound upon the bars of the reel, it is to be taken off, hung up, and another skein commenced in the same manner. The reel generally has two or more sets of arms, and when a skein is full, the arms or running part of the reel is taken off the frame and set aside to dry the silk, after which it is taken from the bars, placed upon a *swift*, and wound on to bobbins; when any number of the bobbins may be combined, called doubling, and twisted together on a common spinning wheel, to make sewing silk.

If it be intended for sale in the state of raw silk, the skeins are to be carefully twisted and doubled, and thus brought into a compact form, tied with a string, and thus packed up for market.

For SEWING SILK, a sufficient number of bobbins are to be combined to make one thread of sewing silk, twisted on a common wheel, reeled off into hanks, the latter twisted partially, and folded by taking two or three turns, as in preparing common yarn for dying, put into some perfectly clear rain or river water, in which a quarter of a pound of good country soap to the gallon of water has been dissolved, and *simmered* over the fire three or four hours, or until the silk is perfectly freed of its gum, and becomes white. It must then be taken out, rinsed in hot rain or river water, and then in cold water. In this operation great care must be observed to dip it gently, drawing it to and fro in the water, so as not to get the silk tangled, or in a snarl. It is then to be hung up to dry; after which it may be doubled and twisted into sewing silk. It should never be put up into large skeins, as it is apt to get tangled. One hundred threads is a good sized skein. If the whole work has been properly done, the silk will be beautifully white, with a rich gloss.

Before the last twisting for sewing silk, if to be colored, it may be dyed of the desired color, and then twisted.

The above directions will apply to all kinds of reels generally. The only difference consists in the following particulars. With Brooks' and other reels of American construction, the silk is run directly upon bobbins, two or more bobbins are combined, and the thread produced passes through fliers and is thus twisted; it is then wound upon a common reel into hanks, and folded for bleaching by boiling, as above described.

Brooks' machine is said to reel double and twist at the same time; but it does not do it strictly speaking. The thread first passes on to the bobbins partially twisted; when the bobbins are full, the thread from two or more of them is combined, and passed through the machine again, when it is twisted into sewing silk. There are four fliers to this machine, two are used for reeling and the other two for doubling and twisting the silk that has before passed through the other fliers. I think it were better to use all the fliers for reeling; and after reeling as much as is desired, then to use all the fliers for doubling and twisting. For domestic family purposes, this machine is admirably adapted. It makes excellent sewing silk and thread for knitting. Large establishments will of course not need instruction as to the machinery to be used, from me.

WASTE SILK, perforated and imperfect cocoons, may be easily converted to useful purposes. The cocoons are to be cut open with scissors, the shell of the chrysalis taken out, and the cocoon, together with all other waste silk, put into water, and the gum extracted as above. It is then to be rinsed, dried, picked fine, carded and spun like flax-tow, and makes most beautiful and durable stockings and gloves. The better method is, after the gum has been extracted, to take the mass of fibre, stretch it out, and cut the whole into pieces five or six inches long, like cutting a skein of yarn. The fibres are then not too long for the operation of carding.

Concluding Remarks.

I have now given all the instruction necessary to a complete domestic silk establishment; such as will enable every farmer's family to pursue the business in a domestic way, and to make it the most profitable *pin-money* affair to which the young ladies can possibly turn their attention. Indeed all they make from it will be so much clear gain; for none but otherwise idle hours need be appropriated to it, except in the reeling, and in most cases not even in that. A young lady in any farmer's family, can thus make five to ten pounds of sewing silk or knitting silk, or raw silk for sale; and not only not work hard, but do scarcely more than occupy hours that would otherwise hang heavily on her hands.

I feel called upon by the peculiar situation I occupy, to make a few remarks in relation to the profits and prospects of the silk-culture in the United States. I have said before, that we shall become a great silk producing country; that ere long we shall supply the factories of Europe with the most valuable part of their raw silk, as we do now with cotton. This I conceive nothing can prevent. That we shall also, in the course of no very long time, become the manufacturers and exporters of finished silk goods, is clearly inferrible from the first proposition. From this it will of course be inferred that I consider the production of silk, in all its branches, a profitable business; and I do so consider it. My experiments for twelve years past have clearly satisfied my mind upon this point. But I do not consider it as profitable as many of the ardent friends of the cause would make us believe. I do not consider it sufficiently profitable to authorize farmers, mechanics, lawyers, doctors, and merchants, universally to abandon their old and well understood pursuits, to enter into this, which they do not understand. It is undoubtedly a safe and a lucrative business, when well understood and well pursued; but that *any body* can give up his ordinary occupation, step into this, and make his fortune by it, like the drawing of a prize in a lottery, must not be expected. We often see calculations made of the amount of money that can be made from an acre of ground. All such are clearly fallacious. No dependence can be placed upon them, simply because the business has not been sufficiently practised in this country to afford any good grounds for them. And then, again, as *labor* with us is more costly than land, it is more proper to inquire how much *each hand* can make, especially as more than nine-tenths of the value of the silk is derived from the labor expended in its pro-

duction. But no estimate can be made even of the profits of labor in consequence of our want of experience. But that we shall ever realize the great profits from this business that we are continually told we shall, seems improbable from the very nature of things. Why, if such great profits can be made from the culture of silk as $1000 to $2000, from an acre of ground, and that too, as we are told, with very little labor, and to the extent of as many acres as we please, why, I ask, are not France and Italy, nay all the south of Europe, where silk has been made for ages, universally engaged in the business? Why are they continually purchasing the raw silks of the east for their factories? Will any people import an article for consumption that they can produce at home at less cost? Labor is cheaper there than here, and consequently one would suppose they could make as much profit by the silk culture as we can. It is true we have several important advantages over every other country. We have a climate better adapted to it; our people are more enterprising and industrious; we can use the morus multicaulis, (which they cannot, on account of the difficulty of getting over ancient prejudices, and of substituting it for their already established trees of other kinds.) But we have also our disadvantages, the principal of which is the cost of labor. We cannot expect to do much more with our advantages than to make them offset the disadvantage of the cost of our labor. Suppose, however, we do realize double the profits that they do; even then we shall not make any thing like the profit we are told we shall. If the silk-growers of Europe made any thing more than a good living business of it, every body there would immediately go into it; for there, as well as here, and every where else, all very profitable professions, or trades, are sure to be immediately filled with occupants, and thus overdone. Another view. If the business was so very profitable, the prices of the article would speedily be reduced by competition, until it afforded a fair profit merely. It is so in all other branches of trade—why not in this? The French and Italians are surely as capable of estimating the value of things as we are. If silk can be made for four dollars a pound, and it costs six dollars to import it, we may be sure that it will be made, not purchased. These remarks are not made to discourage persons from going into the culture of silk; but rather to prevent disappointment in those who are led astray by over sanguine estimates. I find myself placed in a singular predicament. For many years past I have been urging this business upon public attention, and doing all I could to induce our people to go into it; now, on the contrary, I feel called upon to restrain the spirit I have heretofore spurred to action. In this I anticipate that I shall be accused of inconsistency. But, if I am properly understood, no such fault will be discovered. Now, as heretofore, I urge upon farmers every where to introduce the business into their domestic affairs. Let the people of the *poor-land districts* of the old states introduce it there. It will be as profitable, if not more so, than the cotton crops, and grain crops of other and more favored districts, and will thus serve to equalize the productions of all parts of our country. The old worn-out lands of Maryland, Virginia, North Carolina, &c., cannot by any possibility be put to a more profitable use. But neither in this nor in any other case where it is made an exclusive business, must it be expected that enormous profits are to be made. It must be remembered, that *great profits* cannot be made in any business for any great length of time, simply because every body will go into it, overdo it, and thus reduce its profits to a mere living rate. With these remarks I take leave of the subject.

GIDEON B. SMITH.

From the American Farmer.

ON BUILDING AND FILLING ICE-HOUSES.

Latitude 39°
October 15, 1823.

Sir—I would not give one solid ounce of experience for a whole ton of theory. I have an ice-house, the pit of which is 6½ feet, the earth thrown out raised a good mound 2½ feet more, making 9 feet to the bottom, which is a tolerably dry sand. It was for many years a pit with a pen inside, made of flat pieces of mauled oak—the earth came to the back of the logs. In the centre of the bottom there was what was called a dry well—that is, a round hole a foot deep, of which I have never perceived the advantage. The same kind of mauled pieces laid on the bottom, formed the floor—the pen was about 11 feet square in the clear, with a capacity of about one thousand cubic feet. A thatch of corn tops on poles, formed the roof and cover, with a door of entrance into the north end. This house used to hold about from 30 to 35 common sized ox-cart-loads; the ice pounded from the size of a walnut to a brick.—It generally kept ice till the middle of August, and then left us more disagreably off, than if we had not enjoyed it at all. It was near the poultry yard, and the blame was laid on the poor hens, which, fond of a cool place to nest in midsummer, used to scratch holes in the bottom of the thatch, and let in the rain water. This was often one cause of the loss of the ice, but not the only one. The fact was too well established, the ice seldom reached September—and I became fully convinced that the principal reason of the early loss was, that the mass of ice was too small. The rats also plagued us very much in the chief use of a country ice-house, the preservation of fresh provision.

I determined to endeavour to remedy all the faults. With this view, the old work, now much out of repair, was broken up—the pit enlarged to 16 feet by 24, in which a 9 inch brick wall was run up to 6 inches above the ground, and the floor was paved two bricks thick—the pit was then 14½ feet by 22½ feet in the clear; and 8½ feet deep to the surface of the earth. On the pavement I laid four sills, on which I raised a frame, 11 feet by 19 feet in the clear, with sleepers 6 inches deep, resting on the pavement. The top of the frame even with the brick work.—A tight floor of good plank was laid, and the frame planked up tight on the inside.

This plank pen, or pit, is 11 feet by 19 in the clear. There is of course, a space of about 20 inches all round, between the plank and the brick work.

The design in making the pit oblong, was to take off 7 feet of one end, and appropriate it to milk in the summer season—but having a cool

dairy which keeps milk pretty well, this was never done; and the whole pit containing upwards of 1500 cubic feet, has been used for ice.

Above ground, upon the brick work, there is a frame house 24 feet, by 16 feet and 5 or 6 feet pitch. This house is but half boxed, and the air is freely admitted between the main and false plates. There is an upper floor laid on the joists, except a space about 2 feet by 6 in the centre. Directly over this space there is an aperture 6 feet by 6 or 8 inches, in the ridge of the roof, over which aperture there is a bonnet to keep the rain out. The sides and the ends from the aperture in the floor, to that in the roof, are planked, so as to prevent any opening between the loft and this centre ventilator. By these contrivances, the loft is kept stowed full of straw to produce more than the coolness of a thatched roof, and yet the air has an uninterrupted passage in at the eaves, and out at the ridge. There are a few narrow strips of plank nailed a foot apart on the innersides of the studs—and the space between the weather-boarding and the strips is also filled with straw.

On the south side of this house there are trees, which break the rays of the mid-day sun from the roof. The body of the house is kept white and sometimes the roof.

When first used, the space between the bricks and planks was kept clear; with the idea that the air would prevent the damp from the earth and bricks going to the planks—but experience has fully proved in this latitude, that from the last of February the air should be kept as far from your mass of ice as possible. For several years this space has been kept well filled with dry straw. We have ice in this house, at this time, and since it has been packed in the manner now pursued, it has not been unusual to have ice, till ice has again returned.

The mode of putting the ice up, is considered very material, and is as follows. The space between the bricks and planks is examined, and seen to be well packed with dry straw—the plank pit is made perfectly clean. The ice is brought in as large cakes as can be conveniently handled, and in as regular squares or oblongs, as they can be conveniently cut and broken by the eye and axe. These cakes are laid upon the naked plank floor of the pit, leaving as small joints and crevices between as possible. A trough or old canoe is placed near the door of the house—into this the small pieces and broken bits are put and pulverised quite fine, and the crevices between the layer of cakes is well filled with it; the surface of the cakes being kept clean.—A second layer of cakes is than laid down, and the crevices filled as before—and this simple method is continued till the pit is full. A very little care will keep the surface of each layer level, and the whole will go in as solid as a piece of stone-mason's work.

No straw is put on the floor under the ice; because experience has proved it is not necessary, and because if it should become wet, and need to be removed ever so much, it cannot be got at. Nor is there any put between the side planks of the pit and the ice at the time of packing, because it is not then necessary, nor can it be well done at that time.—With all possible care the straw will mix with the ice and be put in irregularly.—Whereas if the pit be filled solidly and entirely with ice, as soon as the ice begins to shrink from and leave the sides of the pit, this regular vacancy can be well crammed with dry straw, and if this straw get damp, it can be easily taken out and changed. But if the straw had been put in the ice, it would take up more space, and from its irregular stuffing, would be found much more difficult to remove, should it become damp or mouldy.

About the last of February, the mass of ice is covered over with dry straw, not less than three feet thick, and if straw is plenty, the house from the ice to the joist is filled with it. It is considered very necessary to keep it wrapped under a thick coat of straw, sedge or dry leaves. Should the straw next the ice become damp, be careful not to expose the ice to the air, but begin at one end, and let the damp straw be pulled out—and the next straw above, which is not only dry, but cool, be suffered to settle down on the ice. It you have more dry straw, let as much as was taken out wet be brought and put on the top of the straw in the house—or let the damp straw be dried and sunned, and then returned on the top of the straw in the house. Never think of changing the whole mass of straw on the ice at one time, by bringing fresh straw from the barn yard, for this dry straw from the barn-yard will always be of a much warmer temperature than your ice, and will be sure to melt it very much.

The advantages of packing ice in the above mode, over the common method of pounding into small lumps, are many, and striking. In the first place, if the ice be three inches thick, or more, it can be stowed quicker with the same hands. Again, you can pack much more ice in the same space—my house that used to be filled with forty-eight ox-cart-loads of ice when pounded, has often taken in seventy of the same sized loads, when packed in the whole cake—and this will not appear at all surprising upon a moment's reflection. By pounding, you do not pack it; but infinitely multiply the pores and crevices—any miller knows, that a bushel of corn when pulverized, or ground into fine meal, will measure out not far short of a bushel and a half. Any wood-cutter knows, that a cord of round logs, say a foot diameter, with the insterstices filled with small round wood, if the logs be split or mauled into marketable wood, will measure near a cord and a half fair measure. But, sir, I will give you an example exactly in point, and which, at least, any countryman can try. Recollect, *pounding* ice is very far from *packing* it. It is not compressible like flour in a barrel under the action of the packer. Take an ear of corn, roll it in half a sheet of paper—let the paper come just even with the but, or large end of the ear, and an inch or two beyond the small end—twist the paper at the small end, and tie it with a string all round so that when the ear is drawn out, the paper will form the exact case of it. Draw the ear, shell it, and return the grains into the paper case. If the ear is of the gourd seed, or of a kind having long grains and a small cob, the grains which will lay packed exactly like the slippery hard-pounded ice, will be found nearly to fill the paper case, notwithstanding the whole cob has been withdrawn.

If, sir, you are not now convinced that seventy loads of ice can be packed where forty-eight only

will stow when pounded—nothing need be said to attempt to convince you that a mass containing the greater number of loads, will keep longer than one containing only the less number. But this is not all—when the ice comes into use, that which was packed is easily raised in large, native, solid, brilliant lumps, which will last more than twice as long, after being brought to the cooler, &c. as that which has been pounded.

I thought I would have given you the size and plan of a good cheap ice-house, I have already trespassed too far with the long story of my experience.

Your obedient servant,

CRŒSINUS.

From the Penny Magazine.

THE FORESTS OF AMERICA.

Those who have never explored the primeval forests of America, can form but a very imperfect conception of the depth of the gloom and solemnity which every-where prevades them. Save on some of the south-western ridges, such as intersect the great valley of the Ohio for instance, where, beneath the outspreading branches of the oak, the chestnut, the walnut, and the sycamore, you find spots of luxuriant herbage, and myriads of bright and beautiful flowers, all the rest of the interminable woods that I ever, in my devious rambles, have explored, are wholly destitute of herbage, yielding neither grass nor flowers. Wherever you tread, the surface of the ground is thickly strewn with decayed and decaying leaves; and dead branches, of various shapes and sizes, are daily toppling down from the lofty stems to which they have belonged. And though the winds may rage, and the storm may beat, in the tops of the tall forest-trees, yet there reigns an everlasting stillness near the surface of the earth; not a breath of air is there to stir the light and withered leaves: where they fall, there they are suffered to moulder and decay. The boundless covering of crisp and brown leaves becomes partially enlivened by the green of the young seedlings, which spring up by thousands during the summer season; but as the all-vivifying influence of the glorious orb of "light and life" cannot reach their lowly condition, for the most part they pine and die, their places being supplied with another crop of these "annuals" each succeeding summer.

It would be tedious to enumerate all the varieties of timber-trees found in the vast wildernesses of America; yet there is, in almost every section of the country, some predominant species, from which the woods acquire their appropriate name and character. The chief of these may be comprised in the four following, namely,—oak-woods, beech-woods, pine-woods, and cedar-swamps, or barrens. All these forests are gloomy, but they have their comparative degrees of depth of shade: the oak-woods being the least dark, because of the trees standing further apart; the beech-woods in the next degree; and then comes the sullen pine; and, lastly, the sombre cedar. When the sun is in its meridional summer splendor, a quiet, chaste and mellow light is admitted through the veil of pale green and semi-transparent foliage of the oak and beech woods. At that season, too, a few, but only a very few, summer-birds frequent forests of this character; and whose song, if song they have, is wild, monotonous, and melancholy. Occasionally, the ear is startled by the loud tapping of some industrious but unmusical woodpecker; and even in the depth of winter, its rapid hammering may be heard from afar,—for some of the more hardy varieties of the woodpecker tribe do not migrate at the approach of the most inclement seasons. Besides the few birds that usually frequent these forests, they are inhabited also by playful squirrels, of three or four varieties; their haunts, however, being generally confined to those tracts of country where mast and nuts are in the greatest abundance; for in all the northern regions of America they have to store up provisions during the summer and autumn, on which they have to depend for a subsistence through a long and rigorous winter. I have already enumerated all of animated nature that tends to lessen the gloom and loneliness of the oak and beech woods; for the larger animals which are found there are but rarely seen: and from their wild and savage habits and dispositions, the heart of man can derive no pleasurable sympathies or feelings.

I have described these forests as they appear to him who explores them during the sunny season of summer; but when the early frosts have seared the foliage of the oak and the beech,—and the autumnal tempests have scattered the leaves of the walnut, the ash, and the maple,—the light of day is more freely admitted through the lofty branches of the forest trees. But the birds of summer are gone; and should the season be pretty far advanced, the nimble-footed squirrels will have retreated to their holes and cavities in their favorite trees, no more to be seen sporting and frolicking until the warm and congenial suns of the ensuing spring shall awake them to renewed life and activity. Even the larger wild animals will have become more scarce by the time that winter has fairly set in, for some of them will have gone into their retreat, and have become torpid; and those that remain, being now able to discover man's approach at a greater distance, in consequence of the foliage no longer impeding the view, seldom suffer themselves to be closely approached. The winter snows lie smooth and unruffled in the wilderness, save where is seen the trail of some stalking deer, or the track of some prowling fox or wolf. In the mountainous districts, you occasionally come upon the footprints of the American panther; and in some of the western regions, the traveller will have an opportunity of remarking upon the trails of small herds of elk that have crossed his forest-path.

I come next to speak of the pine woods, and although they are not so common as the "green woods," as those already described are familiarly called,—yet there are millions of acres of forest, where pine, of two or three sorts, is the only, or at all events the generally prevailing timber. When the summer sun is in its full power and splendor, the light, if light it may be called, in the pine woods resembles faint and dubious twilight. This greater degree of obscurity is caused, partly by the darker and more impervious nature of the foliage, and partly in consequence of the pine-trees growing closer to each other than other forest trees generally do. Neither is there any season in the year in which the trees are bare;

much of the winter snow lodges on their branches, and that which finds a passage to the earth seems to have been deprived of all its native purity in the gloom of the recesses where it reposes. As regards the loneliness and melancholy of these regions, summer and winter are nearly alike; for during the season that rejoices all other parts of the creation, no summer bird resorts to the pine-clad regions to build its solitary nest, or chant its simple song of happiness and love. Scarcely a busy woodpecker is to be heard, (seeing one is out of the question); and as for squirrels, they find no business there; except in their migratory excursions instinct should happen to guide them through some section of a pine forest. The bird most commonly found there, is the New England partridge, or the Virginia pheasant; but even these are scarcer than they are in the more cheerful "green woods" of various parts of the country. It may be observed, that the pine forests are considerably taller than any of the rest; probably 160 feet would be below their average height; and although so very tall, the trees are seldom more than two feet in diameter, in consequence of their growing in such close vicinity. In the green, or summer woods, you frequently fall in with a few straggling pine trees, growing up amongst the light green foliage to the height of 60 or 70 feet above all the surrounding forest trees; standing like sentinels set to watch over all the silent wilderness. And when one has an opportunity of looking down upon the surrounding woods from some lofty and abrupt eminence, the whole country appears covered with brushwood or shrubbery, with here and there a pine tree of moderate size, shooting up from the midst of it. The white pine forests are the most general, as well as extensive, in the northern regions of America.

The cedar-woods are commonly confined to swamps; but they occasionally intervene on mountain ridges, where the soil is miserably poor: and, the trees attaining but a small size, such situations are called cedar-barrens. There are also oak, as well as pine barrens, in various parts of the country. The pine woods, as already stated, are dark and gloomy; but the cedar-swamps are still more dismal. Although they are seldom of great extent, to be under the necessity of traversing a few miles of these swamps is no ordinary undertaking; for, in many situations, the cedars grow so close to each other, that there is barely space for a man's body to squeeze through between them. And, taking into the account the nature of their dark-green foliage, some idea may be formed of the gloom and melancholy which for ever pervade the cedar swamps. Some of them are of so boggy a nature, that it is with extreme difficulty they are explored by man; and as the heavens are entirely shut out, the compass is absolutely necessary to direct the wanderer in the right way; and even this can hardly be trusted to as a sure guide, for there is not sufficient light upon all occasions to enable him to ascertain the quarter to which the needle points. One of the most extensive cedar-swamps known at present, is the Dismal Swamp, in Virginia; the length of which is upwards of thirty miles. In the interior of Canada, these swamps abound more than they do in any other section of the country with which I am acquainted; and notwithstanding the contiguous lands may be of the very best quality of soil, at the present day these swamps are utterly worthless. It is mostly the white cedar that grows in them, but the trees do not attain a great elevation, neither are they bulky, since very few of them exceed twelve or fifteen inches in diameter. Were other sorts of timber more scarce, white cedar would be in greater demand: at present, where it can be got to market at a moderate expense, it is used for laths, staves, and shingles. There is, if possible, a smaller portion of animal existence in these dreary regions, than in the desolate pine woods; for if we except the millions of mosquitoes that these swamps give birth to, scarcely is there aught that "lives and breathes" within the dark precincts of the cedar-woods.

There are some remarkable natural phenomena in the forests of America, two or three of which I will briefly notice; but as I have never heard what I consider satisfactory arguments advanced to account for their existence, I shall forbear hazarding any opinions of my own. In journeying through the interior of the country, where the forest has been little, or not at all, encroached upon by the axe of the woodman, you will often, after travelling for two or three days through regular pine woods, suddenly and unexpectedly find yourself in woods of a perfectly distinct and dissimilar character. This, in itself, is nothing extraordinary; but if you will take the trouble to examine a little into the matter, you will then find that there is no visible natural reason for this change; since, for all that you can discover, the soil, and all that is therewith connected, is precisely of the same character and quality on both sides the line which marks the change of timber. At other times, a small and insignificant stream will form the line of demarcation, but if you examine you will find that there is not any change or new arrangement in the mineral kingdom between one side of the stream and the other. These changes, when they do occur, are seldom of small extent, for you often find them running directly through regions of country for scores or hundreds of miles, every where showing the division line with a remarkable distinctness. And in those changes it is not only the leading character of timber which gives place to some other equally distinctive and prevailing: but the few inferior trees and shrubs are superseded by another set of secondary trees and shrubs, of a perfectly distinct order and character. Often from some lofty acclivity, have I stood gazing upon these dividing lines of the vast and wonderful timber-crops of the American primeval forests! when I could trace the divisions as accurately and distinctly as I could in my own grain-field, where a single furrow was the line of division between a crop of full-eared wheat on the one hand, and of the more plebeian oats on the other. In this case, I knew the cause; for I had said there shall be wheat here, and oats there, and it was so; because the proper and necessary seed was committed to the ground, and the respective crops sprang up accordingly.

In the new settlements, my agricultural pursuits have sometimes led me to witness changes which seemed altogether, to me, inexplicable. I will mention one of the instances to which I allude; and having related what I myself witnessed, and made a few observations respecting the situation where it took place, I will then leave the matter to be accounted for and explained by the

learned in Nature's secrets—if they can. During the winter season the whole of the timber was cut down upon a piece of ground containing about twenty acres. This was in what was generally called the beech woods, from the major part of the timber being beech; but where there were also small quantities of maple, birch, ash, &c. During the following summer, fire was applied to this "chopped fallow," as the prostrate timber is called; and in the course of an hour all the dead leaves, the decayed timber, and the smaller branches of that which had been standing the previous year, were entirely consumed. Circumstances occurred which prevented the remaining trunks of the trees from being rolled together, in the usual way, and burned; so that in the condition described, this twenty-acre field was permitted to remain for several years. After the lapse of a year or two, the whole field became a plantation of young wild cherry-trees, although I am not aware that a single cherry tree was growing on the spot, or near it, at the time the timber was cut down. Some few of this species of cherry tree were to be met with in various parts of the surrounding woods; but it was altogether an exceedingly scarce sort of timber. During the first and second year of the growth of this young cherry plantation, I took considerable pains in searching for the cherry stones, (if such there were, or ever had been,) by pulling the seedlings up by the roots, and then examining the soil as minutely and carefully as possible. But for all my labor and research, I was not rewarded by the discovery of a single seed or stone! Had the young trees been left unmolested, here was a piece of ground, containing twenty acres, that would, in the course of forty or fifty years, (for this species of cherry is of rapid growth) have become a perfect forest of cherry-trees to that extent. Now, permit me to ask, is it probable that birds—for I have previously stated that very few inhabit the wilderness—should have brought hither all the cherry stones from which so many thousand seedlings, (I have no other name by which to designate them) sprung up in this identical spot? Or is it possible that all those young trees should have sprung up without there being any seed (cherry stones) in the ground at all? And supposing they were there, from whence, or when did they come?

On other occasions I have known oaks and hickories, and maples cut down, and instead of their places becoming supplied by a new generation of their own particular species, after the ground has been left uncultivated for a few years, a general and full crop of young pine trees has sprung up. Now here again, who or what could have brought the cones of some distant pine tree to this particular spot? And if they had been brought, was it by mere accident that they were strewn so regularly over the whole surface?

Far into the interior of the continent of America, in the midst of immense tracts of forest, you sometimes fall in with small openings,—patches of ground from which the Indians, or the early fur-traders, have taken away the timber, or perhaps consumed it on the spot. In some instances, these places will be overgrown with immense briers and brambles; but occasionally grass will have sprung up, and there you may find as luxuriant plants of the common white clover as are to be met with in any part of our own island, or even in the rich pastures of Holland. Here again is a dilemma. Either birds or beasts (and none but wild ones have ever been there!) must have brought the seed, or else it must have lain dormant in the soil, for I know not how many centuries, or the soil must have produced it spontaneously. I have stated these things precisely as they are; and all that I shall advance upon the subject, is, that I know them to be facts.

When trees tumble down in the forests through absolute age and decay, their places are generally supplied by saplings, that have long been strugling in the shade near them, either of their own or some other species. But when a chestnut tree falls its place is commonly filled by one of its own kind; for a number of sprouts shoot up from the root of the parent while it is still standing, one of which taking the lead of the rest, grows up in due time into a forest tree; while the rest of them droop and die for want of proper aliment. I have been able to trace distinctly three or four generations of the chestnut; for, owing to its decaying so slowly, the old fallen trees do not wholly disappear until their children and grand-children have grown up, flourished, languished in old age, and at last fallen beside them.

INDIA RUBBER, OR CAOUTCHOUC,

Is slightly analogous to silk. It is a remarkable fact, that all the plants the silk-worm feeds on contain a larger or smaller quantity of caoutchouc such as the lettuce, dandelion, mulberry tree, &c. In the Brazils, and more particularly in those parts where the India rubber tree (Ficus elastica) abounds, large moths, of from 2 inches to 3 inches in length, producing excellent silk, in large quantities, are very common. From the variety of useful purposes, to which India rubber is applicable, (from a lady's watch-guard or stay-lace, to a ship's cable,) a great demand has been created for this article, which has induced the mercantile world to bend its attention to it, as a valuable remittance. It is a singular fact, that, wherever the teak tree flourishes, there the India rubber plant may be found in abundance, namely, 20° north and south of the equator.—*Eng. Newspaper.*

From Loudon's Gardeners' Magazine.

ANTISEPTIC PROPERTY OF HONEY.

The best mode of conveying grafts of trees, cuttings of vines, &c., to a distance, is to place them in a tin case or cylinder filled with honey. The honey hermetically excludes the air; and cuttings so preserved will vegetate many months after they have been packed.—[Melons, and various fruits, are preserved in this way in Italy.—*Cond.*]

From Loudon's Gardeners' Magazine.

NOTICE OF MR. JOYCE'S APPARATUS FOR HEATING BY STEAM.

In the first week of June last, we called on Mr. Joyce, at his market-garden, in Camberwell, New Road, in order to see a mode of heating by steam which he has invented, and for which, he informs

us, he has taken out a patent. According to this mode, a charcoal fire is made in the centre of the boiler of water, and the vapour from the charcoal is conveyed away in the same tube which carries the steam from the water round the house. The steam condenses in the tube, and the condensed water is all returned to the boiler; while the vapour of the charcoal is allowed to escape at the extreme end of the tube. The boiler, which is portable, and made of copper, occupies a very small space; and being placed within the house, and isolated, none of the heat generated by the fuel can, by any possibility, be lost; for even the heat that escapes at the farther extremity of the tube, along with the vapor, is still given off to the atmosphere of the house; and, however deleterious it might be for human beings, if allowed to accumulate, it certainly appears to produce no bad effects on plants, for a more luxuriant crop of strawberries than that in Mr. Joyce's forcing-house, we have never seen. * * * * * *

THE UNFITNESS OF THE NORTHERN STATES FOR THE MORUS MULTICAULIS.

The following extract from an editorial article, in the last Cultivator, strongly confirms the views which we have presented in several former articles in the Farmers' Register, as to the superior advantage of the climate of the southern states, for raising this valuable plant. There can be no higher authority than that of the editor of the Cultivator on this subject, as to the latitude of his residence, (Albany, N. Y.,) and of course, for all the more northern regions of the United States.

"In regard to the culture of this mulberry in our latitude, we have only to repeat the opinion we have often expressed, that the *tree* will not stand our winters, except, perhaps, upon a poor dry soil, when the growth ceases, and the wood hardens, before the occurrence of severe frosts. Indeed this is now virtually conceded by the growers; for we believe it is the general practice to secure seedlings in the cellar, or to bury them in the ground, and to cut down the trees, cover the stumps, and secure the tops and branches for propagation. Cutting down at autumn is recommended as the best mode of increasing the foliage, and as facilitating the gathering of the leaves; as many sprouts spring from the stump in the spring, and the leaves of which may be gathered without climbing."

In addition, we will here refer to a late and full statement in the Genesee Farmer, which was made to show the enormous increase *of about one hundred per cent.*, by the purchase of the cuttings, &c., and a year's culture of multicaulis, and the sales, or estimated value, at the late high prices in western New York. Now, though one hundred per cent. per annum is indeed a great profit, in a regular business, with prices of seed and crop nearly the same, yet in the late and present state of the multicaulis sales and speculation, a profit of one hundred per cent. is not worth mentioning, in comparison with the usual returns in Virginia and North Carolina; and any crop here which brought no more than one hundred per cent. of profit, or increase, this year, would not be worth making in ordinary years. An increase of forty-fold (in kind) is no rare product here; and if profits are counted in money prices, (as was done in the statement of the Genesee Farmer,) sundry cases might be adduced of actual profits being one hundred fold, or an increase of ten thousand per cent. in one year's cultivation. Yet this would be no more proof of ordinary annual profits here, than the statement of one hundred per cent. profit, made *this year* in western New York, is proof that the morus multicaulis can be profitably raised in that region, every year. We have no doubt but that all nurserymen and salesmen of the multicaulis plants, near navigable waters north of Sandy Hook, can more cheaply buy or raise their stock in lower Virginia, than they can furnish themselves at home. The expense of rent, agency, and transportation, would not by any means equal the disadvantages of the uncertain vegetation, dwarfish growth, and immature wood, of these plants raised at home.

SOME OF THE BLESSINGS OF EMIGRATING TO THE NORTH-WESTERN STATES.

Many of the people of Virginia have been long accustomed to consider and discuss, as well as to try, the advantages and disadvantages of emigrating to the new south-western states; but few, comparatively, have paid attention to those of the north-western states and territories. The known circumstances and supposed advantages of the latter were not such as greatly to tempt southrons. But still, the great natural advantages of this extensive and fertile region were universally admitted; and among these advantages, few of us would not have admitted, without question, the almost certain and exuberant productiveness of the rich lands, and the general healthiness of the residents, in so high a northern latitude. And these supposed and unquestioned advantages *have* operated to tempt a portion of southern emigrants to encounter the known disadvantages of that region, one of the greatest of which is the cold of winter, so long and so intense as to benumb the faculties, bodily and mental, for one-third of the year. But it seems that we have been too ready to admit the advantages of the north-west, in regard to health, and the abundant and sure production of the necessaries of life. In proof of grounds for this doubt, we annex several articles which have recently appeared in the several publications from which they are copied.

The first is from the Bangor Whig, and from the pen of the editor, who was then travelling in the north-western states.

"I cannot say I am so well pleased with what I have seen in the western country as I anticipated, but I am but ill qualified to judge as yet. One thing is certain, this part of the country, if it ever arrives at the greatness predicted, must do so through the deprivations and sufferings of the present generation. The present settlers are working hard for posterity—will posterity reward them? The common comforts and conveniences of life are given up,—people merely stay, dragging out an existence; toiling and sweating for the improvement of a country which it will take years to bring to a state of civilization, if one may so term it. The cities of the west are comfortable compared to the interior settlements, but even those are at present miserable places for men to live in, but yet they are inhabited. Chicago, for instance, on Lake Michigan, is below the level of the water in some places, and no where above it. No cellars can be dug because of water. Here lurk bilious and intermittent fevers and agues.

"The past summer, throughout the whole country, as you are aware, has been remarkable for its intense heat, and great drought—through the west this has been the case in a most extraordinary degree. The consequences are now being experienced, and they are indeed awful. A wide spread pestilence extending from the Ohio to the far west, is sweeping many to their graves, and causing an immensity of suffering. Places have been deserted, and the cattle turned in the unreaped fields. Whole towns have been sick—six or eight patients to a family—none have escaped, far and near this disease has stricken the weak and the strong. It is a bilious fever, not very fatal, it is true, but exceedingly distressing. I have scarcely seen a good looking countenance since I left Detroit. This fever is natural to this new country, and always prevails during the latter part of the summer in some places, and to some degree, but it has never before made the sick tremble and the well man turn pale. The fever will undoubtedly stop as soon as cold weather approaches."

"*Health of Iowa and Wisconsin.*—The Galena Advertiser and Gazette of the 10th ult., [Oct.] says:—'We have distressing accounts of sickness from almost every quarter of the inhabited parts of the territories of Wisconsin and Iowa, as well as many portions of Illinois. The motality, generally, we are happy to learn, in this affliction, bears but a small proportion to the number of attacks. The chief causes, according to all accounts, are bilious fevers, and fever and ague."

The next is from the Cultivator of November.

"*Sickness in the West.—The Land Sales.*—The citizens of northern Indiana have addressed a petition to the president of the United States, asking a postponement of the sales of the public lands in that section. They give as their reasons for making this request, that "there is now prevailing throughout all that section an unparalleled epidemic, that is carrying hundreds to their graves, and thousands to their sick beds, while their crops are rotting in the fields unharvested; amid such universal distress that it renders it impossible for the settlers to make the necessary exertions to obtain the means of purchasing their humble homes."

The next is a letter to the editor of the Cincinnati Gazette.

"*Lake C. H., Ia.* 13*th Oct.*, 1838.

"To the Editor of the Cincinnati Daily Gazette.

"Dear Sir.—The unparalleled drought still continues with unabated intensity. Scarcely rain enough has fallen in this section of the country to lay the dust, since the fore part of June. Wells, ponds, springs and streams, that had every mark of 'living water,' are gone, no one knows whither. Many have their water, for family use, to haul miles. Cattle are turned out upon the broad commons to seek their daily drink. Even the musk-rats, that abound in such immense numbers around the head of Lake Michigan, are wandering far and wide over the dry prairies in search of their natural element.

"'The Eclipse' and the Equinox have passed, a dry storm of wind. No frost as yet has been sufficient to kill vegetation, and yet it is dried up and ready for the spreading fires that annually sweep over the prairies, the smoke of which now fills the air, and darkens the sun. A cool dry atmosphere, with high winds, has slightly improved the health of the country, but much suffering still exists.

"A most singular and remarkable fact is worthy of notice. While all the waters around have fallen, Lake Michigan has risen. The Indian tradition, long doubted, is likely to be verified, of a septennial tide in the northern lakes. It would appear as though all the surplus waters of the land had been conducted by some mysterious agency into the lake, until it is so swelled that its waves sweep with unrelenting fury over the fair fortune of many a rich owner of city property, whose thousands are permanently invested in 'Water lots.'

"A gentleman now present, whose word cannot be doubted, informs me that on a recent trip from Detroit to Chicago, he saw numerous deserted habitations upon the shores of the lakes, in some of which the water was two feet deep. And at Milwaukie, that many a lot was more suitable to sailing than walking.

"A hard fate seems to await numerous 'fine flourishing towns' in these parts. Some are submerged, and some are dried up with the great drought until they have 'not a local habitation,' though none lack a name, and some a very great one—in sound."

From the New England Farmer.

AGRICULTURAL SOCIETIES AND CATTLE SHOWS.

The cattle shows and exhibitions of manufactures in our states having closed for the season, we propose now to say a few words, of their utility, and the modes of managing them; and to suggest such measures as in our opinion would in-

crease the advantages of our agricultural societies, and render their influence more effectual to agricultural enterprise and improvement.

We have not at hand the means of ascertaining with precision the dates in the case; but, as well as we can recollect, the first cattle show in the United States was held about twenty-four years since, under the spirited exertions of some intelligent gentlemen at Pittsfield, Mass., at the head of whom was Elkanah Watson, Esq., then of that town. The Berkshire Agricultural Society took the lead in the case, and a ploughing match was connected with their cattle show. This intelligent and highly enterprising society have continued their cattle show and exhibitions from that time to the present, with unabated zeal; and with beneficial effects of a decided and permanent character upon the agriculture of that district. Perhaps no better evidence of this can be given than in the fact, that the interest taken in this institution by the farmers of Berkshire universally was never stronger than at this time; and the exhibitions of the society, as we have been informed, were never more numerously attended nor better sustained than the current year.

The Massachusetts Agricultural Society, instituted as early as the year 1791, soon followed the lead of the Berkshire Society; and for more than twenty years, with the exception of three or four intermissions, held cattle shows and exhibitions of domestic manufactures at Brighton, open to the competition of farmers from every part of the commonwealth. Here too ploughing and drawing matches were held, which, by the liberality of their premiums, brought competitors oftentimes from a distance of fifty miles. These shows were held and managed under the direction and personal superintendence of gentlemen of the highest standing in professional and political life; and went off with spirit and effect.

These movements were soon followed by the formation of county societies in the several counties of Essex, Worcester, Middlesex, Hampshire, Hampden, and Franklin, and Bristol and Plymouth. These societies were encouraged by liberal grants from the legislature, giving to every agricultural society, formed in a county containing not less than 25,000 inhabitants, for every thousand dollars, which they should raise and permanently invest for the benefit of that society, the interest of which should be yearly appropriated to purposes of agricultural improvement, the annual sum of two hundred dollars, to be applied in premiums under the direction of the trustees of the society; provided, however, that in no case should any society receive annually more than six hundred dollars. Under these provisions a sum of upwards of four thousand dollars has been yearly given by the state to these different societies to be disbursed in agricultural premiums. This being added to the amount furnished by their own funds had formed a considerable aggregate: the sums actually offered by the Mass. Agricultural Society in premiums the current year exceeding in amount twelve hundred dollars. These county societies are now all of them in the practice of holding cattle shows and exhibitions in their respective counties. We have had the pleasure of attending as many of these as was practicable. As far as our observation extends, the bounty of the state could not have been applied to a more worthy object, nor with more success as concerns the public wealth, and the general improvement. The agricultural improvements in the state within the last twenty-five years have been immense. The plough itself has become a new instrument, in form, in lightness of draft, in ease in handling, in ease of repairs, in the execution of its work, and in the neatness of its construction. The potato-hoe, the drill seed-sower, the seed-harrow, the cultivator, the roller, the cradle, the horse-rake, the corn-planter, the thrashing-machine, the double mould board plough, the side hill plough, owe their origin and general diffusion to agricultural societies and agricultural publications. The introduction of new seeds, of most valuable fruits, of excellent esculent vegetables, of improved varieties of Indian corn, wheat, barley, and oats, this likewise is to be attributed in a great measure to the same source. The introduction likewise and diffusion of improved breeds of live stock, of the fine-woolled sheep, the long-woolled sheep, the mutton breeds, the several improved varieties of swine, the beef and dairy stock, the Devon, the Holderness, the Alderney, the Ayrshire, the improved Durham short horns, and of horses of an improved kind for the saddle and for draft, are all more or less to be ascribed to the spirit of public enterprise and improvement awakened and kept alive by these agricultural societies, exhibitions, and publications. It is indeed impossible to estimate by any exact measure what has been effected in the short space of a quarter of a century; but it meets the observing and experienced eye every where in the improved and well furnished houses, ornamental fences and embellishments, smooth and well cultivated fields, commodious barns, substantial wagons and carriages, which are to be found every where in profusion among our agricultural population. It is important to keep this spirit of enterprise and public improvement awake and active; to press the steam to the utmost limits of safety; "to speed the plough;" and to relax no efforts to advance the cause of agricultural improvement; to diffuse agricultural intelligence; to raise the character and the profession of the farmer; and thus to extend the power and the means, and quicken the spirit and enterprise by which the treasures of the earth shall be developed, the fund of human subsistence become constantly enlarged; and the comforts and reasonable luxuries of life diffused among all without stint.

The agricultural societies hold the power of doing immense good; and, as the gentlemen who have the direction of the funds of these societies have no private views to answer, but are laboring in the most disinterested manner, solely for the public good, we know them too well to fear giving offence by any suggestions, which have no other object than the public good; and which will not be submitted without a perfect respect for their public spirit and superior judgment.

We have the highest opinion of the utility of cattle shows, ploughing matches and the exhibition of agricultural products and household manufactures. They excite an emulation, which engenders no bitterness of feeling, and which prompts to the most spirited improvements. They gratify a laudable ambition to exhibit to others, what we have accomplished. They extend the knowledge of what has been done far beyond what it could be by any

other means. They are the only opportunities which many farmers enjoy of seeing samples of the improved stock in the country; and of comparing it with what they have themselves. They bring farmers together to interchange friendly sympathies, and to communicate their mutual experiences. They bring men of different professions and conditions together, the professional, the literary, the commercial, the manufacturing and the agricultural on common ground, and where no jarrings of religious or political party ought to intermingle; where those who labor with the head are made to feel their dependence on those who labor with the hand; and those who labor with the hands recognize their obligations to science, to commerce, and to the mechanic arts, and find their own profession exalted and their self-respect increased by this unrestrained and mutual intercourse. These cattle shows have been the means of inducing the importation of all the valuable animals, which have been brought into our state through the liberality of gentlemen of large capital and large minds, in order to improve the stock of domestic animals in our own state. Especially, they keep the great subject of agriculture before the public mind in the light of its intrinsic, permanent, and universal importance. The well-known custom of the emperor of China at the return of every spring, to show his respect for the cultivators of the earth and thus honoring their great art by holding the plough himself in the presence of the dignitaries of the realm and of assembled thousands of his subjects, is well known. Its favorable influence upon the agricultural classes may easily be inferred; and our cattle shows, bringing together as they do gentlemen of all professions, have the same beneficial effects.

It has been, therefore, to us matter of much regret, that the Massachusetts Society has now for two or three years suspended its annual and accustomed show at Brighton. We know that it is attended with great labor to the gentlemen of the board of trustees, to get up and superintend a matter so foreign to their accustomed pursuits and habits; perhaps it is a labor we ought not to ask of them; but we believe that sixty or a hundred dollars would furnish them three or five practical men, who would gladly take all the drudgery of the management off of their hands, and get it up and carry it through in a manner honorable to the board and entirely satisfactory to the public. We know the labor is considerable, and in such case ought to be compensated; and we do not know how some portion of their funds could be more properly applied. H. C.

From Silliman's Journal.

CURSORY REMARKS UPON EAST FLORIDA, IN 1838.

By Maj. Henry Whiting, U. S. Army.

Public attention has most naturally been turned towards Florida for the last two or three years. That peninsula has been the scene of a contest of remarkable character, awakening a curiosity respecting its topography, resources, &c. which has found but scanty means of gratification. Although the first portion of the United States to be permanently occupied, (St. Augustine having been founded in 1564,) and early signalized by political revolutions, military events, and romantic enterprises, yet its history, both statistical and natural, has been but imperfectly understood by us. The Spaniards no doubt had a tolerably accurate knowledge of the interior, which was formerly somewhat extensively occupied by them. Their settlements, however, were much broken up during the insurrectionary movements which immediately preceded the transfer of jurisdiction to the United States, and the majority of them, when that transfer took place, were abandoned, under the influence of strong national prejudices, which led to a distrust or dislike of a new and dissimilar government. Much local information was thus withdrawn. St. Augustine in the east, and Pensacola in the west, with some few subsidiary plantations, were all the settlements that came into our possession. The rest was nearly an unoccupied waste. Even a knowledge of the St. John's, the grand artery of the country, had nearly passed away; so much so, that at the commencement of the present campaign (1837–8) the form, extent, and depth of its upper waters were unascertained.

The war which has lately been carried on with the Florida Indians has opened the country generally to observation, and its character will hereafter be better, if not well understood. Our troops have traversed it in almost every direction; nearly all parts have been explored, excepting the interior of the lower parts of the peninsula south of the Okachobee Lake. From the 26th degree of latitude northward, the geography may be laid down with general accuracy. Indeed, United States maps of this character are already in the hands of some of our officers, which will no doubt soon be lithographed.

The river St. John's was early entered into both by the French and the Spaniards, the rise and fall of whose establishments there form an interesting aud sanguinary portion of history. At the present time (1838) there is scarcely a dwelling occupied on either of its banks fifty miles above its mouth, though many evidences of former occupancy, such as falling buildings, or fields bearing the marks of having been cultivated, are seen some hundred miles higher up. Many of these farms or plantations were abandoned by the Spaniards at the change of jurisdiction; others were the work of Americans at a later date. But all had shared a common fate at the opening of the present contest. The Indians burnt all the buildings and plundered and massacred all the inhabitants that were not defended by a garrison, and desolation is now seen, where, a few months since, were sugar fields, cotton fields, orange groves, and many other proofs of a thriving population.

This river (St. John's) is in most respects of a remarkable character. It is unlike most if not all of the rivers in North America, having little current at any point of its course, and passing through a country, from its very source, so level in its surface, as scarcely to warrant the expectation of any stream at all. At low stages of the water there is no visible current even in the upper parts of the river, though at high stages it is visible, having perhaps a movement of one mile an hour. Below Lake George, which is more than two hundred miles from its mouth, the tides have

a slight effect, and vary the current accordingly, modified, however, by strong winds. Still, the waters have not any where a stagnant appearance, and if unpalatable, they are so from causes independent of their want of proper agitation. They are uniformly of a dark color, like that of tolerably strong coffee, the bottom scarcely being discoverable even in the shoal parts. The origin of this tint may be various; decomposition of vegetable matter can contribute but little to affect a body of water so large, particularly when a considerable portion of the banks are either savannas or pine bluffs, neither likely to have much agency in this way. Lake Monroe may furnish a chalybeate tincture, as its shores abound in chalybeate earths. The lakes above may bear the same character. The waters do not lose their color when suffered to stand in a vessel and to make deposite of such particles as may be afloat in them.

The St. John's is a large river for some hundred and fifty miles from its mouth, being from three miles to a mile wide nearly as high as Lake George. Thus far it has the appearance of an arm of the sea, and in fact feels the influence of the tides. From Lake George upwards it is comparatively narrow, excepting where it dilates into lakes, and very winding, running perhaps several miles in one mile of a straight line. Lake George has been long known, and Lake Monroe, about sixty miles above, was occupied by our troops the first campaign of the present war. Thence upwards the river was to be explored at the commencement of the present campaign. It was soon penetrated through Lake Jesup to Lake Harvey, and afterwards to Lake Poinsett, about a hundred miles above Lake Monroe.

Charleston and Savannah steamboats ascended with army supplies without difficulty, at the high stage of the waters, to Lake Harvey, which supplies were sent thence by row-barges to Lake Poinsett, where the river ceased to be subservient to the purposes of transportation. This high stage was in the fall; as the winter months set in, the larger boats could ascend no higher than Lake Monroe, until spring rains again raised the level of the waters.

The banks of the river as high as Pilatka, or more than one hundred miles from its mouth, are generally elevated several feet above the water. From that point to Lake George they are comparatively low, and are probably mostly submerged at high stages of the water. Between Lake George and Lake Monroe the banks are generally high enough to be dry, excepting where savannas prevail. Wherever the pine-barrens strike upon the river, the banks are eight or ten feet high, with a substratum of shelly soil or rock. To Lake Monroe they are for the most part clothed with a growth of wood—chiefly live oak, pines, and cypress, as high as Lake George; the palmetto or cabbage tree, being largely intermixed thence upwards.

The gray moss clothes nearly all the trees upon the river, excepting the pine and palmetto. These are respected or avoided by this general associate of the trees, from some want of affinity which may not be understood. This moss is a most singular production, having a rank luxuriance little according with its kindred species. It hangs from every bough many yards in length, and wears the appearance at a distance of dingy muslin thrown with a careless grace over every part of the tree, waving to and fro in the breeze and forming a most striking embellishment of the scene; and the effect is not diminished by the presence of the tall and symmetrical palmetto, which rises up some forty or fifty feet perpendicular, like a perfectly wrought column, surmounted by a capital of most appropriate beauty. The moss never throws its foldings over this handsome tree; as we have before remarked, the pine is equally avoided by it. This capricious forbearance with respect to these two kinds of trees, introduces a beautiful variety into the river scene. Where the banks are high and sandy, the pine prevails; where they are low and wet, the cypress—"the melancholy cypress." The live oak, and other miscellaneous trees, prefer the banks of an intermediate character, as also the palmetto. The cypress seems to exclude all associations; no other trees mingle with it, or if they happen to start up along side they are soon overshadowed above by the spreading tops, or crowded out by the cone-like bases below, which last leave only room for the thousand "knees," or sharp excrescences, from one to several feet high, which shoot up like so many dwarf pinnacles.

Ascending the river, which is constantly winding and shifting the point of view, wherever the cypress permits, there the moss is seen in all its sweeping luxuriance. As these trees spring from nearly a water level, and grow to about an equal height, their flat and spreading tops present nearly a horizontal line. where the green appears in all its depth and freshness. Thence, however, to within a few yards of the ground, the folds of moss, like ample curtains, conceal nearly all from view, leaving the trunks exposed below, which are covered with a whitish bark. This aspect may prevail for half a mile, when the banks may rise and become covered with the live oak, whose angular and scraggy arms give a new appearance to the moss, which is still as luxuriant as on the cypress. But the outline above is far different here. Palmettos perhaps raise their graceful heads above the oaks in striking contrast with their associates; or perhaps the pine may show in the barren beyond; while over all is the clear azure of the sky, always in Florida

"So purely dark, and darkly pure."

These changeful beauties, combined with the occasional sight of a wild orange-grove, with its golden fruit bespangling the foliage, altogether render a trip up the St. John's delightful in a high degree.

The ash, poplar, swamp oak, &c., which line the banks of a part of the upper St. John's, drop their leaves during the winter months, unlike all the other trees to which we have been alluding. But these trees would seem to be deciduous, to exhibit more plainly the verdant parasite which attaches itself to most of their branches. In passing up the river for the first time, the uninstructed gazer is surprised and puzzled to see on all these trees a tuft of evergreen, while the branches in general are stripped of their foliage, until informed that it is the mistletoe, which, having attached itself thus to a foreign stock, continues to smile in verdure, while its supporter is standing in gloomy nakedness. The mistletoe bough is always of a rounded form, varying in size from a few inches to thirty or more in diameter. The seeds, which are

said to be winged, have a gluten surrounding them, which enables them to attach themselves where they alight and at once to draw forth nourishment as if fixed to a parent stem. The *nullius filius* of the forest, it is adopted by the first tree to which it flies for protection and sustenance.*

Sulphur springs are very abundant on the upper parts of the St. John's. They bubble up like *jets d'eau*. In passing up to Lake Monroe, there is one a few miles below, which attracted, among others, the notice of Bartram. An inlet on the right bank is seen, nearly of the width of the river, which at once attracts the eye, by the contrast between the color of its waters and that of the river. Two pieces of lumber, placed at right angles with each other, one of mahogany and the other of yellow pine, could not be more dissimilar. And the liquid line of separation is almost as distinct as it would be in the supposed case. The St. John's has here, as elsewhere, its coffee-like hue, while the waters of the sulphureous inlet are as transparent as the air, the fishes swimming in them being nearly as discernible as the birds flying over their surface. The alligators, diving, as usual, at the approach of a boat, when they happen to take refuge in this limpid inlet, continue to struggle downwards in apprehension, as if they felt that it did not afford the usual refuge.

Ascending this inlet several hundred yards, it is found to terminate in a well head or basin, of some thirty feet diameter, with high banks, in the centre of which there is a permanent turmoil of the waters, as if a fountain below threw up its contents with much force. Rowing the boat upon this agitated spot, it was with difficulty kept there in its position, against the efforts of the ebullition to throw it off. A strong odor of sulphur fills the air around, and the taste of the waters is equally sulphureous.

Above Lake Monroe, wide-spread savannas become prevalent. They form the main body of the section of country through which the St. John's flows, and are so slightly inclined, that its course is extremely tortuous. the bends having more the shape of a horse shoe, than of a segment of a circle. The immediate banks in these savannas are somewhat elevated above the level of the waters, as the growth of a wild cane indicates, but the greater portion of them bear a tall, rank grass, which shows that it is often inundated, and that the soil is constantly saturated with moisture. Lakes George, Monroe, Jesup, Harvey and Poinsett, are fine sheets of clear water, of no great depths, but generally free from aquatic vegetation. They all abound in fish and wild fowl.

Fort Taylor, (a mere stockade like all the other forts in Florida of recent origin,) which was built a few miles above Lake Poinsett, three hundred and fifty miles or more from the mouth of the St. John's, is the highest point to which the army boats ascended. Above that post, the river narrowed and shoaled, so as to become useless for all purposes of transportation. The army there took its course southwardly, reaching the head waters of the St. John's, some seventy or eighty miles S. S. E. The source of this river has been in question up to this time, having been supposed to be connected either with the everglades or the sea. Both of these suppositions are now at an end. The strip of land between the coast and the St. John's, as far south as Cape Florida, has been sufficiently explored, to determine the fact, that it has no channel connexion with the sea in that quarter; and it has been equally ascertained, by various army movements, that it is also without a like connexion with the everglades or the lakes, to the west and south-west. In rainy seasons, when the water overspreads nearly the whole country, the St. John's may be connected in a diffused way with both sides. Fall and spring rains, when they come, elevate the river sometimes many feet, as would appear by marks on the banks. The last two or three seasons, the difference has been from two to three feet. The low stages are, at midsummer and midwinter and when the periodical rains happen to fall, or are only moderate, the subsidence must be very great. It has been remarked by the Indians, that all the waters occasionally drain out. This may be an exaggeration; but such a result, nearly to the extent expressed by it, might easily be supposed to follow a year of drought, the St. John's being evidently dependent for its supply on the tides below and the rains above.

The interior of Florida, south of Lake Monroe, was scarcely known, until the present war. It was assigned by conjecture and common report, to the "everglades," an indefinite and comprehensive term, which means neither land nor water, but a mixture of both. These supposed everglades, have been much circumscribed by late examinations. They have lost, at least, one or two degrees of latitude. Okachobee Lake, a body of water of some forty miles in diameter, and of a decided lake character, and the lands east and west of it, can no longer be thus classed. The lake south of this, reported to be still larger than Okachobee, called by the Indians, Pai-hai-okee, or grassy lake, may prove, on examination, the true everglades. But it is now about as probable, that even this, their last hold, will be found to partake of the general character of that part of the peninsula, and that land and water will then have its usual divisions, so far as a sandy country of unusual flatness permits. The name which the Indians have given the lake, shows that it must be generally so shallow as to allow grass to predominate; rendering it probable, that it has a less decided lake character than the lakes above.

It was until lately taken for granted, that the interior of Florida was without any eminent parts, but the army movements have opened to obser-

* This is a mistake. The seeds of the mistletoe are not *winged*, or capable of being conveyed to other trees by the winds. But their diffusion and propagation are as well secured by another curious and admirable provision of nature. The seeds are enclosed in berries, filled principally with a glutinous pulp, and which form food for certain birds. In eating the mistletoe berries, the glutinous matter and the seeds contained, which adhere to the outside of the bird's beak, are wiped off, on any branch on which it afterwards perches. By this operation, the seeds are stuck to any other, and often to distant trees, where they sprout and take root; and the manner of the deposite is the cause why the mistletoe more often than otherwise is rooted in the lower side of the limb, as a bird most conveniently wipes its beak on the lower side of the branch on which it stands.—Ed. Far. Reg.

vation, some sandy ridges or hills of considerable elevation. These are not far from that central region where the waters diverge to different sides of the peninsula. The course of the various streams which take their rise within these central parts, marks out the character of the slope, running north-west, south-west, south-easterly and northwardly. The Onithlacoochee, Pease Creek, Kissimmer, St. John's, and the waters emptying into the Indian River lagoons, all illustrate this central elevation, and general inclination towards the coast.

One of the striking features of the coast of Florida, is the lagoons, as they are termed, or long and narrow bodies of water, separated from the sea by a strip of sand, generally not more than a mile or two wide. They are connected with the sea here and there by inlets, which are made and kept open by the out-rushing or in-rushing tides, as they happen to prevail. The outward current is that which chiefly prevails, from the most natural causes. Accumulations from rains, must give a great preponderance to the inner waters, which, however, may, in the course of a dry season, drain out to a level with the outer waters, when the drift of a storm blocks up, at least for a time, the usual passage, and so it remains until the balance of force is turned by new rains.

This alternate operation of counter causes, explains the fact well known by those who frequent this coast, that these inlets are at one time very accessible, and at others, nearly or quite closed up. These lagoons extend from above St. Augustine to Jupiter inlet, a stretch of three or more hundred miles, with but a few miles interruption by land. Their common depth is several feet, though they all are traversed by shoals or bars, which reduce their navigable facility to about three feet. These shoals, however, could easily be made passable for useful purposes. It has been proposed to connect the river St. John's by a canal with the Matanzas river, separated by about ten or fifteen miles; the Matanzas with the Halifax, twice that distance, perhaps, apart. Between the waters of which the Musquito inlet is the embouchure, and those of the Indian River, there is only a narrow neck of about half a mile. Such a project would open an interior navigation from Charleston to Jupiter inlet; and below Cape Florida it is well known that a practicable and sheltered channel runs around the peninsula, within the "keys."

The mangrove tree is a conspicuous embellishment of the Indian River lagoon. Being of an aquatic character, these trees, by a happy provision of nature, are radicated to suit their thrifty habits, not unlike the long-legged species of birds which are fitted for the water; they stand with their trunks lifted several feet in the air, sending out roots from that elevated point, like so many bow-legs, to seize the earth or water below, with a base often as wide-spread as the branching head above. Then, again, as if these roots could not drink moisture enough to satisfy their cravings, each branch sends down many a slender tube perpendicularly to the water, like so many syphons to draw it up. The foliage is of the brightest green. Altogether, a mangrove thicket is a most attractive object to the eye. These thickets sometimes shoot out a spur into the lagoon, resembling just above the water a fisherman's weir-net, but surmounted by a most redundant foliage, and almost closing up the channel.

The bars at the mouths of the lagoons are an obstruction to the commercial facilities of Florida. The entrance to St. Augustine harbor is perhaps the best on the coast, and, with proper attention to the tides and winds, is safely practicable for vessels of light draft. The drift of the ocean, which in this quarter is strongly charged with alluvion, heaps up the sands along the coast, constantly changing their position, with, probably, a gradual augmentation. The inlets would share the common fate, and be closed up, if it were not for the outsetting currents, arising either from the tides, or the accumulation of waters within. These causes, with partial exceptions, keep open a channel, but cannot preserve it in one place. The bar off St. Augustine has widely shifted, being now nearly one-half the points of the compass to the north of its position, within the memory of living pilots. Those of the more southern inlets are less practicable, excepting that of the Musquito. The channels are known only to those who are habitually upon them. A fearful looking surf is always coursing over them, when a wind is blowing with freshness, which renders them formidable to strangers, while those who are accustomed to them, pass through it with little real hazard. The evil, however, is a great one, and apparently irremediable.

The rivers of Florida, though of no great length, are, generally, of a most convenient depth. The banks are bold and firm. Those which empty into the lower part of the St. John's, are fitted for any craft that comes into the main river, or have no impediments in the way, excepting what arise from fallen trees. There is no current to change their character, which belongs to a level country.

The botany of Florida was early examined by the Bartrams, and Audubon was some time among its birds, which are rich in number and variety. Many anecdotes are told of the latter, showing the patience with which he kept his station in swamps and marshes, in order to ascertain the habits of the feathered creatures there, in spite of musquitoes, reptiles, and other intolerable annoyances. Doct. Leitner, who was killed in a skirmish with the Indians, this campaign, (1838,) is said to have been a skilful botanist, and an ardent votary of science. Accompanying a portion of the active force, he would have had uncommon opportunities for observing the plants of the southern interior, which, probably, came little within the scope of the Bartrams, whose investigations were mostly, if not altogether, on the river St. John's and the coast. He had already made considerable advances towards the object he had in view, with a most flattering prospect before him, when he fell in the honorable performance of his duty.

The orange tree has been extensively cultivated in Florida, since its first occupation. The Seville or sour, and bitter-sweet orange, are apparently indigenous to the country, as many groves of both are now found flourishing, where no labor of man would seem to have placed them. The China, or sweet orange, is probably an exotic. These were found, not only around nearly every house in the country, but occupying a part of nearly every garden in the towns. They were

an important article of commerce. The oranges of Florida excelled all others in the northern markets. More than two millions, were annually shipped from St. Augustine alone. One tree there is said to have produced six thousand in one year. But this staple of the country was cut down in one night, in 1835. A severe frost occurred in the time of Bartram, (1765,) which killed the lemon, citron, and other tender trees, but only partially injured the orange. There were trees standing in 1835, more than a century old.

This calamitous event, besides destroying one of the principal sources of revenue of St. Augustine, divested the place of its chief ornament. Each lot became, as it were, denuded of its drapery, which had been thrown over every building, high and low, giving them all a borrowed beauty. A person who was absent at the time of the frost, in revisiting the place, could scarcely recognize the most familiar scenes, their aspect was so entirely changed. It takes about seven years to renew the orange tree to a bearing state.

Cotton and sugar grow well in Florida, but silk will probably be the staple of the country after a few years. The mulberry tree, multicaulis, &c., grow there with a vigor and luxuriance that have no parallel in the United States. More than eight months in the year afford a fulness of food for the worms.

The soil of Florida wears a forbidding aspect. Sandy barrens form the principal part of the surface. Hammock land, that which bears the oak, maple, and other "hard woods," and which are the richer and more productive parts, constitutes but a small proportion. But the sands of Florida are but in part siliceous. They are probably for the most part comminuted shells or lime-stone. Hence they have a degree of fertility which often surprises those who undertake their cultivation. The surface, however, is so level, that it is liable to the extremes of drought and inundation. In riding from the St. John's to St. Augustine, a distance of eighteen miles, the road will be found, after a moderate rain, one-half or two-thirds under water, which is carried off more by evaporation than by subsidence; and this is a sample of the country in general.

The yellow pine, pinus palustris, is a conspicuous tree in Florida, both on account of its lofty symmetry, and its adaptation to many useful purposes. It affords tar and turpentine in inexhaustible abundance, and is an equally inexhaustible material for lumber. Whether it be the only growth the soil can yield, or merely a pre-occupant, as in many other parts of the country, giving place, when removed, to a species of hard wood, is, perhaps, not yet ascertained. It is propable, however, that when this tree shall be cut down, and fires, scorching the whole face of the country, shall cease, the growth of the forest lands will assume a better aspect, and that the soil will improve in a corresponding degree. It is the fallen tree of this pine, which furnishes the Indian with his "light-wood;" a source of comfort and convenience that strongly attaches him to the soil which produces it. The fuel formed from these prostrate trunks, is at hand on every spot, and is easily ignited, making, in all weathers, a bright and durable fire. The nights of Florida are almost invariably cool, and the facility with which the Florida Indian can temper their chilliness, by means of this ready and combustible wood, is a conspicuous item in the privileges of his life, the great design of which is to attain desirable objects with the least effort. Our troops, in the late campaigns, have been equally indebted to it for many a comfortable encampment, as, even in the midst of heavy rains, a brilliant fire might be kindled, which, with due care, no rains could extinguish.

The hammocks at present are generally secure from encroachment from the barrens, being mostly covered with a dense growth of trees, which preserves them from change. But, whenever the time arrives in which they shall be cleared up, and become exposed to external influences, it is not unlikely that the surrounding barrens, clothed in a soil of such levity as to be acted upon by winds and rains, will gradually overspread these comparatively small spots on the surface of the country, and reduce nearly the whole to one general character.

The waters of Florida abound in fish. Even the upper parts of the St. John's afford a large supply of very tolerable quality. But the lagoons of the coast have not only an abundance of the finest fish, but also of the finest oysters. The oysters of Indian river are surpassed by none, in size or quality, on the Atlantic coast. Want could never approach the inhabitants of that region.

The present war, during which the Indians have been too much harassed to attend to seed-time or harvest, has turned attention to the class of indigenous esculent vegetables, which, by their spontaneous abundance, have, through the extremities of this period, afforded them ample means of subsistence. The most conspicuous among these are the red and white coonta roots. The first is the China-brier, or *Smilax china*, a vine of great thriftiness, spreading sometimes over the space of more than a hundred feet, with roots like a large, long and irregular potato. The white coonta is the *Zamia integrifolia*, which has a full tap-root, rounded with the symmetry of a boy's top. The leaves are large and fern-like, forming, when the seed-bud is in its fulness, a handsome plant.

Both of these roots are grated or bruised by the Indians, and the starch separated, by frequent changes of water, from the fibrous or woody parts, as also, in the white coonta, from a poisonous quality which is combined with it in its natural state. The flour of the latter has the look and feel of arrow-root, and is equally nutritious and well suited to weak stomachs. The flour of the China-brier is of a reddish hue, and more easily obtained than the white coonta.

These two important articles of food are found in abundance, the one or the other, in most parts of southern Florida; the China-brier in nearly all the hammocks, and the Zamia in most of the barrens along the coast lagoons. Thousands could subsist upon them, with only the labor necessary to gather the roots and prepare the flour. Previous to the war, one or two persons were established near Cape Florida, who manufactured the white coonta in large quantities for shipment. Medical men often prefer it, for hospital purposes, to the arrow-root.

The palmetto is often called the cabbage-tree, from its containing an edible substance within its

top, which somewhat resembles a cabbage—more in look, however, than in taste, which is not unlike that of a raw chestnut. Where the fan-shaped leaves of this beautiful tree put out at the top, is found unfolded a pith, forming about one-third of the diameter of the trunk, and about 12 or 15 inches long, which is of an eatable quality, particularly when boiled, or preserved as a pickle. It is true, a tree some half-century old might be sacrificed to the attainment of a single meal; but these trees are abundant, and no doubt have often afforded one to a roving Indian, who sat down hungry and unprovided beneath their shade.

But the necessities of the war now going on, have opened a new resource to the Indians, or which, at least, does not appear to have been used by them in more abundant times. This is found in the root of the *saw-palmetto*, a singular species of most common vegetation in Florida, which overspreads nearly every pine-barren, covering it like a vast reticulated carpet. In passing over these barrens, the palmetto leaf is seen shooting up from the ground in great luxuriance, forming, as is found on close inspection, the termination of a recumbent cabbage-tree, several feet long, and probably half buried beneath the surface, or deciduous vegetation. Lying constantly on the ground, it never acquires the bony hardness of the exterior coat of the upright cabbage-tree, but is covered with a fibrous hairiness, which gives it almost the softness of silken plush, prevailing through every fold, to the very heart, excepting within a few inches of the end, where is found a nutritious pith, smaller than, but not unlike, that of the cabbage-tree. This is bruised into meal, and made subservient to the purposes of food. These roots spread, as we have before remarked, over nearly every barren; and, since a portion of them is convertible into food, there can be no limit to the spontaneous subsistence of those who frequent them. The leaves or foldings of this root are thin and pliable, several inches long, and three or four wide, and are worked into many articles of ornament and use.

There is also found in Florida a wild potato, of tolerable quality, and much wild fruit. Game of all kinds is abundant, and wild fowls are numerous on every stream and lake. The Indians, in Spanish times, were accustomed to herd cattle largely, and at the commencement of the present war, they are said to have had thousands.

From this enumeration of the articles of food which present themselves spontaneously to the wants of the Indian, it will be seen that they are little dependent on care, foresight, or labor, for subsistence.

The mineralogy of Florida is scanty. The rocks found in situ are all calcareous, though siliceous boulders, of a small size, are occasionally seen, and nodules of hornstone are here and there mingled with the limestone, which elicit sparks, and are sometimes used by the Indians for flints.

The geology of Florida presents many interesting features; but it has as yet been examined with little attention, warranting few definite conclusions. The coast, as far as Cape Florida, is alluvial, a seeming mass of comminuted shells, resting on a rocky formation, composed also of shells, more or less broken and abraded. From Cape Florida, the formation is mostly coralline, the Keys being of that character. The shells around the Keys are found in nearly a perfect state. Take up a handful at random, and it will exhibit little else than fragments of coral and univalves, generally of a small size, and diminishing almost to a point. As high as Indian River Inlet, the beach is still formed of shells, though less distinct and perfect in their form, mingled with some sand; while about Cape Carnaverel the sand predominates, until shelly fragments almost disappear to the naked eye. Still, it seems probable that the whole beach is of a calcareous character.

The coquina rock (as the Spaniards called it) is a formation found in the spits of sandy land which separate the lagoons near the coast from the sea. It has been quarried in Anastasia island, for more than a century, affording a material for structures of all kinds in St. Augustine, worked with uncommon facility, and of a durable character. A large fort, of Spanish construction, at that place, is of coquina. In latitudes where there is little or no frost, it is, perhaps, the best material that can be used in fortifications; being firm enough to sustain the form of any work, and receiving a shot like a plastic mass, exhibiting no fracture, and throwing off no splinters.

The quarries near St. Augustine are generally about ten feet deep. The profile of the strata, as presented to the eye there, exhibits, first, a superficial covering of vegetable mould; next, a stratum of shelly fragments, quite small, and without any distinctness of character, with no cohesion. This stratum varies much in thickness, according to the undulations of the surface, being generally from two to three feet. The next in the descending series is a stratum of several inches thickness, composed of similar shelly fragments, but united in a mass by some cement. Then intervenes a stratum of sand, an inch or two in thickness. Immediately below this sand is a stratum of shelly rock, between two and three feet in thickness. This stratum is formed of shells in various states, the upper several inches being much like the stratum above, that is, of small and indistinct fragments, when, for several inches more, it assumes a new character, many of the shells being perfect in their outlines, and only much abraded, and most of them of a size to give some clue to their species. The interstices in this portion of the mass are large in proportion to the size of the shells, and the cement which holds them together is hardly visible. Bivalves, cockles, of the cardium species, predominate, while here and there is found a conch of large size, as also oyster fragments. Some of these conchs are several inches in length, though much worn. This coarse and comparatively unbroken deposite has a substratum, with which it is equally closely joined, like that superimposed. A thin stratum of sand next succeeds; and then a third stratum of shelly rock, about two feet and a half thick, the component parts of which are in a state rather more comminuted than any lying above. This stratum is likewise of a more solid and uniform character than its associates, and gives the largest blocks for building purposes. A sandy stratum is found below this, and, so far as an examination has penetrated, a coquina formation descends no lower.

All these strata are firm concretions, their component parts being obviously conglutinated by a calcareous substance, which holds them well together. This foreign substance, or cement, is

quite visible in the finer formations, though little seen in the coarser. Taking up a piece of the latter, the cause of cohesion is apparently so slight, that one is surprised that the mass does not crumble at a touch.

It is a common conjecture that the coquina is of recent formation, and that causes are still operating to produce it. This conjecture has some apparent and plausible grounds. It wants, however, the support of deeper investigation into the character and force of these causes. Fragments have been constantly heaping up on the coast, portions of which have been long lying in a quiescent state, without exhibiting any evidences of a change, or a tendency to one, particularly of a change from a loose to a concrete state. The upper stratum of the quarries we have been describing, would be likely to assume the character of the strata below, if such a change were in progress. But the century, during which it has been subject to observation, has witnessed no alteration. The fragments all lie in a separated state, without showing any signs of cohesion.

It has been surmised, that the animal matter of the shells might have furnished the element of cohesion. But this surmise would seem to be at once disproved by the condition in which the shells were found, when the concretion took place. It is evident that they must have been subjected to a long and severe process of attrition and contusion, previous to that event; such a process as must have widely separated all animal matter, from its former covering. Besides, there is no reason for supposing, that this animal matter, even if it had existed in connexion with the shells at the time the rocky formation occurred, could have produced the effect assigned to it.

A more probable conjecture is, that the shells themselves, by some chemical exertions or agency, which operated in connexion with their partial dissolution, furnished the bond of union among the fragments, though not in a way that leaves the same agency still in operation. These different strata are evidently so many distinct deposites, probably at different and distant periods; broken shells thrown up or spread over a certain space, and no doubt converted at equally different and distant periods into solid masses, either by sudden or gradually operating causes, ceasing with their effect. Such a hypothesis is in harmony with our notions of other formations of rock.

There are appearances of shelly formations on the St. John's, particularly the upper parts of it, but the shells are of a different character. Scarcely a bivalve is seen on or near that river, either loose, or in rocky connexion. The prevailing shell there, is the helix, while univalves are as rare in the formations on the coast. The soil at Volusia and Fort Mellon consists of half shells, which are generally perfect in their shape, the defects evidently arising rather from decay than abrasion or contusion.

The limestone does not show itself on the coast, nor on the St. John's until you reach Lake Monroe, where it is intermixed sparingly with shells. On Black Creek, west of the St. John's, a porous, rotten limestone appears, and this is said to be the character of the rock formations throughout the western part of the peninsula. Hence the many "surth-holes," deep and (some of them) unfathomable orifices in the earth, which appear in these regions, and the disappearance of streams for many miles beneath the surface of the earth, while others come forth in all their fulness at once.

The climate of Florida, during the six or seven months from October is truly delicious. The frosts are generally few and slight, leaving vegetation its verdure, and flowers their bloom, throughout the year. Such frosts as kill the tender trees or shrubs are of rare occurrence. Rains occasionally prevail during the winter months, but more commonly during the latter part of summer. Our troops have now been operating during three winters. Two of them have been decidedly dry. The first was rainy.

By a loose diary, kept in Florida, since the last October (1837) and continued through two hundred and fourteen days, more than one hundred and fifty of them, were decidedly clear and pleasant days; about forty somewhat cloudy or foggy; and about twenty rainy, but of these nearly one-half were single rainy or showery days, leaving only about ten which were of a rainstorm character. Musquitoes have bitten, and frogs have peeped throughout the whole time, though not always in the same numbers or with the same spirit.

It is perhaps a common impression, that there are some formidable animals and many venomous reptiles in Florida. The alligator is a clumsy, timid animal, never, it is believed, the assailant, unless it mistake a swimming boy, for its common prey. Scorpions, snakes, lizards, &c., are common upon the barrens, and our soldiers, in sleeping on the ground, often came in contact with all of them, and were often stung by the former, generally with unpleasant, but never with fatal consequences.

Invalids have long looked to Florida as a refuge from the northern winter, and during the disturbances of the last few years, St. Augustine has necessarily been the only place of resort. But when peace shall be established, and the St. John's re-occupied, that river will present many places of great attraction to the infirm and pulmonic.

From Loudon's Gardeners' Magazine.

OF THE ANALOGY BETWEEN PLANTS AND ANIMALS. BY J. A. W.

Many persons buy a plant and plant it in their garden, as they would purchase a piece of furniture and place it in a room, and fancy that the one requires no more after-care than the other; but, when they understand something of the nature of a plant, and of the manner in which it obtains nourishment; and when they perceive how cultivation operates on it; they will take a degree of interest in its growth and developement, that a person totally ignorant of these subjects can scarcely form an idea of.

Plants are organized beings, that, like animals, depend for their existence on nourishment, warmth, air, and light. Their nourishment they derive from the soil, their warmth and air jointly from the soil and the atmosphere, and their light from the sun. As all men may be presumed to know something of the nature of animals, perhaps the easiest way of giving some knowledge of plants to those who have hitherto paid little

attention to the vegetable kingdom, will be, by first pointing out the principal points of analogy between plants and animals, and next noticing the structure and functions peculiar to plants.

Plants resemble animals in having an organic structure endowed with life, and in requiring nourishment to enable them to continue to exist. They absorb this nourishment through the small tubular fibres of their roots, in the same way as animals do theirs through the small tubes called lacteals, which convey it from their stomachs. Plants differ from animals in being fixed to one spot; in having the principles of vitality and reproduction diffused over every part, and in thus being propagated by division, as well as by ova, or seeds; in being without a brain or nervous system, and, consequently, incapable of feeling; and in light being as necessary to their existence as air is to that of animals.

The soil in which a plant grows is as essential to it as the stomach is to an animal. Food, before it can be absorbed into the system, must be reduced into a pulpy mass, consisting partly of chyle; or nutritious matter, and partly of refuse. This process, in regard to animals, is performed in the stomach, and is called digestion; and, when it is finished, the lacteals suck the chyle from the mass, and convey it to the lungs, where it is assimilated to the blood, and thence is distributed through the frame.

The food of plants is rotted, (a process similar to digestion) in the soil; and is there brought, by the addition of water and gases, to a sufficient state of fluidity to enable the spongioles of the roots to absorb from it the part necessary for the nourishment of the plant. It is then carried up to the leaves, where it undergoes a process similar to that to which the chyle was subjected in the lungs, and becomes true sap, which contributes to the growth of plants, as blood does to that of animals.

When a plant or an animal is in a state of disease, no application to the leaves and branches of the one, or to the external members of the other, will be of much use, if the soil or the stomach be neglected. The stem and branches of a plant, and the external members of an animal, may be injured, mutilated, and even diseased; but, if the soil and the stomach be invigorated, and placed in a healthy state, the whole plant or animal will soon recover from the injuries it has received, so as to perform all the functions necessary to its existence. The first step, therefore, in cultivating or in improving plants, is, to improve the soil in which they grow.

In all vertebrate animals, there is a part at the back of the neck, between the spinal marrow and the brain, where a serious injury will occasion immediate death. There is a corresponding point in plants, between the root and the stem, which is called the neck, or collar; and at this point plants may be more readily injured than any where else. Most plants, also, may be killed, by covering this point too deeply with soil. In all seedling plants, this neck, or vital point, is immediately beneath the seed leaves; and, if the plant be cut over there when in a young state, the part which is left in the ground will infallibly die. In old plants, however, and particularly in herbaceous plants, which have creeping stems, and in various kinds of trees and shrubs, the roots, after a plant has attained a certain age, become furnished with buds; and, when the plant or tree is cut over by the collar, these dormant buds are called into action, and throw up shoots, which are called suckers. No sucker, however, is ever thrown up by the roots of a plant cut through at the collar while in its seed leaves. The branches of a tree may be all cut off close to the trunk, and the roots also partially removed; but, if the collar remain uninjured, the plant, in a suitable soil, and under favorable circumstances, will throw out new roots and shoots, and, in time, will completely recover itself.

There are some plants of the herbaceous kind, (such as the horse-radish, for example,) that do not suffer, even if their collar should be buried two feet or even three feet; but by far the greater number of plants, (such as the hepatica, the common daisy, the common grasses, &c.,) are killed by having the collar covered two or three inches; and nothing is more injurious to woody plants, whether large or small. It is easy to destroy a large tree by heaping up earth around the base of its trunk; and easy to prevent a small one from growing, by lifting it, and planting it six inches or one foot deeper than it was before. Hence the great importance of not planting any plant deeper in the soil than it was before taking it up. The cause why plants are so much injured by burying the collar has not, as far as we know, been physiologically explained; but it probably proceeds from the want of the action of air on the collar, or on that part of the stem which is immediately above it; or from the pressure of the soil upon that vital part.

The next point of analogy between plants and animals, which it may be useful to notice, is that between the lungs and the leaves. An animal can no more live without its lungs than without its stomach. The stomach, as we have seen, is necessary for the turning of food into chyle, and the lungs for turning that chyle into blood. Now, a plant can no more live and grow without leaves, than an animal can without lungs. The use of the lungs is to expose the chyle to the action of the air, which they decompose, so that its oxygen may unite with the chyle, and thus change it into blood. The leaves of plants, which act to them as lungs; not only decompose air, but light, in the process of elaborating the sap; and, hence, plants can no more live without light, than without air or food, as light is necessary to turn their food into sap, or, in other words, to bring it into the proper state for affording them nourishment. Hence, in the culture of plants, the great importance of light. An important difference, however, between the circulation of the sap in vegetables and the blood in animals, is, that the former have no heart.

Plants and animals agree in requiring a certain degree of temperature to keep them alive; and the warmth of this temperature differs greatly in the different kinds both of plants and animals. Hence, the constitutional temperature of any plant to be cultivated being known, that temperature must be maintained by art; either by a suitable situation in the open air, or by its culture under a structure which admits the light, and is capable of having its atmosphere heated to any required degree. The temperature which any plant requires is ascertained by its geographical position in a wild state; making allowance for the differ-

ence produced in the habits of the plant by cultivation.

Plants agree with animals in requiring periodical times of rest. In animals, these periods are, for the most part, at short intervals of not more than a day; but, in plants, they are commonly at long intervals, probably of a year. In warm climates, the dormant period of plants commences with the dry season, and continues till the recurrence of the periodical rains which are peculiar to the tropical regions. In temperate countries, the dormant season in plants commences with the cold of winter, and continues till the recurrence of spring. When plants are in a dormant state, they commonly lose their leaves, and, consequently, at that season, they are unable to make use of the nourishment applied to their roots; and hence the injury done to them when they are stimulated with nourishment and warmth, so as to occasion their growth during the period at which they ought to be at rest. Hence, also, arises the injury which plants receive, and especially bulbs, if the soil about them be kept moist by water when they are in a dormant state. Plants having no feeling, in the common sense in which the word is used, can neither experience pleasure nor pain; but they resent injuries, either negative or positive, by slow growth, or by becoming diseased. By their being fixed to the spot where they grow, they necessarily depend for their food, heat, air, and light, on the circumstances peculiar to that spot; and, hence, to increase their growth beyond what it would be if left to nature; additional food must be brought to them, and the warmth, airiness, and lightness of the situation increased. Hence, what is called vegetable culture; which consists in stirring the soil, adding manure to it, regulating the supply of water by draining or irrigation, sheltering from the colder winds, and exposing to the direct influence of the sun's rays. If we imagine any one of these points attended to, and not the others, the plant will not thrive. Stirring the soil, and mixing it with manure, will be of little use if that soil be liable to be continually saturated with moisture, either from its retentive nature, from springs from below, or from continued rains from above; or if it be continually without, or with very little moisture, from its porous nature, the want of moisture in the subsoil, and the want of rain and dews from the atmosphere. Improving the soil without improving the climate, (that is, without communicating a proportionate degree of warmth and light,) will increase the bulk of the plant, but without proportionately bringing its different parts to maturity. For example, we will suppose two plantations of trees planted at the same time, on similar soil, and in the same climate; that in the case of the one plantation the soil was trenched and manured, and in the other not; and that the trees were planted in equal numbers in both plantations, and at the same distances. The trees in the prepared soil would grow rapidly. and in the unprepared soil slowly. After a certain number of years (say twenty), we shall suppose both plantations cut down; when the timber produced by that which had grown slowly would be found hard, and of good quality; while that produced by the plantation which had grown rapidly would be found soft, spongy, and, when employed in construction, comparatively of short duration. The reason is, that in this last case the rate of nourishment to the roots exceeded the natural proportion which nature requires in plants, between the supply of food to the roots, and of light and air to the leaves. Had the trees in the prepared soil been thinned out as they advanced, so as never to allow their branches to do more than barely touch each other, they would have produced a great deal more timber than the trees on the unprepared soil, and that timber would have been of equal firmness and duration with timber of slower growth. It ought, therefore, to be strongly impressed on the minds of amateur cultivators, that though nourishment of the root will produce bulk of the top, or, at least, length of top, yet that it is only by abundance of light and air that quality can be secured.

One very remarkable point of difference between animals and plants is, that which has been before alluded to, the much greater provision which nature has made for the propagation of the latter than of the former. Plants not only produce immense quantities of seeds, which are distributed by the winds and waters, by animals, and by various causes: but they extend themselves by shoots, which run on or under the surface of the ground, as in the case of the strawberry, the raspberry, &c.; and they produce buds, each of which, by human art, can be rendered equivalent to a seed, either by planting it (with a small portion of the plant from which it is taken) at once in the ground, or by inserting it in another plant of the same family. Hence, the great facility with which plants are multiplied both by nature and art; with the exception of a few, in which the process of propagation by artificial means is comparatively difficult.

Another remarkable difference, also before alluded to, between plants and animals is, the absolute necessity of light to plants during the whole period of their existence. There are many animals of the lower description, such as worms, to which light, so far from being necessary, is injurious; and there are instances of even the more perfect animals having lived for several years without the presence of light, either natural or artificial. Light is not necessary for either the functions of the stomach, brain, or lungs, in animals: but in plants, though it is equally unnecessary for the functions of the root and the collar, it is essentially so for those of the leaves; and the leaves are necessary to the elaboration of the sap, and, consequently, to the nourishment of the plant. A plant, therefore, from which the leaves are continually stripped as soon as they are produced, soon ceases to live. Small and weak plants, from which the leaves are taken off as they are produced, will die in a single season; and this practice, continued for two seasons, will kill, or nearly so, the largest tree. If, instead of stripping a plant of its leaves, the leaves are produced in the absence of light, and light never admitted to them, the effect will be precisely the same. Seeds germinated, or plants struck from cuttings, in the dark, will not exist a single season; nor will trees, or tubers, such as the potato, placed in an apartment from which all light is excluded, live more than two seasons. Hence, the importance of light to plants can scarcely be overrated; for, while it has been proved that plants, even of the most perfect kind, will live for many months, or even years,

in glass cases in which very little change of air has taken place, there is no instance of plants, even of the lowest kind, such as ferns and mosses, living for any length of time without light. Without light, there can be no green in leaves, no color in flowers, and neither color nor flavor in fruits.

Plants agree with animals in having a sexual system; but they differ from animals in having for the most part both sexes in the same individual. In the improvement of plants, as in the improvement of animals, the sexual system is a powerful agent; and what is called cross-breeding is employed with as great advantage in the vegetable as in the animal kingdom. It is remarkable, that the general laws and results by which the process of cross-breeding in both kingdoms is regulated are the same: the two parents must be two varieties of the same species, and their qualities may be different, but must not be opposite: the preponderating influence, in point of character, is also with the male, and in point of bulk and hardiness with the female, as it is in animals. Many of the finest varieties of fruits, culinary vegetables, cereal grains, and grasses, have been produced by cross-breeding. When cross-breeding is effected between what are considered different species, the offspring is a mule, or hybrid; is incapable of maturing seeds; and generally, in the course of a few years, degenerates, or reverts to its original parentage. The purple laburnum, which was raised from a seed of the common laburnum, fertilized by Cytisus purpureus, is an example of a true hybrid. The flowers partake of the color of that of both parents; and the plant, for two or three years, produced only flowers of this kind, which were never succeeded by seeds: but in the sixth year, in some plants, and seventh and eighth in others, branches of Cytisus purpureus were produced on some parts of the tree, and branches of the common yellow laburnum on others, the latter bearing seed. (See *Gard. Mag.*, vol. xii. p. 225; and *Arb. Brit.*. p. 590.) It thus appears that a true mule, or hybrid, can with difficulty be propagated, even by portions of the plant, or by what is called extension; since it never can be certain whether the portion taken off for propagation will produce the mule or one of the parents. As it is uncertain what are, and what are not, very distinct species, many of the plants originated by cross-breeding, and considered mules, may not be so; and may, consequently, prove permanent and improved varieties. Some mules, also, such as that between the sweet-william and the common pink, are much less liable to degenerate than others. As some of the most beautiful and useful plants in cultivation are cross-bred varieties, or mules, the subject well deserves the attention of the amateur, who will find it a source of useful amusement and recreation.

Plants agree with animals in the offspring, when it is raised from seed, bearing a general resemblance to the parent; but as, in every family, the children of the same parent differ individually in feature, temper, disposition, &c., so, among seedling plants from the same seed-pod, no two plants will be found exactly alike; and some will occasionally differ considerably from all the rest. Nevertheless, it is an undoubted fact, that all seedling plants not only possess the character of the species from which they have sprung, but even, in by far the greater number of cases, some of the peculiarities of the individual. The seeds of any kind of cultivated apple, for example, will produce plants, the fruit of all of which will more or less resemble that of the parent; though perhaps some one or two among a hundred may be considerably different. Hence, by selecting from beds of seedling plants those which are in any way remarkably different from the rest, new varieties are procured; and, till within the last half century (when artificial cross-breeding began to be practised by gardeners), this was the only way in which an improved variety of any species of plant was procured.

Plants, like animals, are subject to various diseases, as well as to be preyed on by insects, most of which live on plants till they have completed their larva state. Plants are also injured by being crowded by other plants, either of the same or of different species. When these spring up naturally around the cultivated plants, they are called weeds, and the cultivated plant is cleaned from them by weeding; as it is in the case of being crowded by its own species, or by other cultivated plants, by thinning. Plants are also injured by epiphytes, which grow on their outer bark, such as mosses and lichens; and by parasites, which root into their living stems and branches, such as the dodder, mistletoe, &c.

The life of plants, like that of animals, is limited, but varies in regard to duration. Some plants vegetate, flower, ripen seed, and die, in the course of a few months, and these are called annuals; while others, such as the oak and some other trees, are known to live upwards of a thousand years. In both plants and animals, decay commences the moment the life is extinct; and in both they are ultimately resolved, first, into a pulpy or other homogeneous mass, for manures, and ultimately into certain gases, salts, and earths. After death, the decay both of animals and plants may be retarded by the same means; viz. drying, exclusion from the air, or saturating with saline or antiseptic substances.

Hampstead, July, 1838.

THE MILK-SICKNESS OR PUKING-COMPLAINT.

[The subject of the following article requires the aid of the botanist, as well as of the physician, for its investigation and remedy. Even if the particular plant which causes this fatal and wide-spread disease has been really discovered, the knowledge of it will not be extended so far in ten years, by means of such description as is given below, as it would in a month, by being recognized by a botanist, if old, or named and described by one, if it is a new, and, as yet, undescribed species or variety.

There has lately been passing through many (if not most) of the newspapers of the United States, as if a statement of recent facts, an account of the ravages of the "milk-sickness" in a particular neighborhood on the Wabash. It should have been given (if at all,) as an old account. Precisely the same article was republished more

than five years ago, in the Farmers' Register. See page 319, Vol. I.]

From the Genesee Farmer.

Mr. Tucker.—I promised, some weeks ago, to give you a brief sketch of the "milk-sickness or puking-complaint," as it is called, that prevails in the west in many places. There never was a disease in any country, where there were so many conflicting opinions respecting the cause. This disease is fixed in the stomach; a fiery burning sensation is felt in the lower region of the stomach, accompanied with a constant desire to puke—the glands are affected; and as the bowels become torpid from the poisonous matter making a lodgment on the stomach and destroying not only the coats of the stomach but affecting all the digestive powers, it is almost next to an impossibility, in an advanced state of the disease, to procure a passage from the bowels. The cattle that have been opened present what is called the "manifold," with its contents as dry as a chip: a part of the substance taken as a nourishment digested, other parts again remaining as when first deposited; the whole region of the stomach having ceased to act! This, in animals, produces what is called the "trembles." The animals may live for weeks in this state, if not entirely overcome; but the attacks, in many instances, are not discernible until there is sufficient action or exercise to produce a circulation of the blood, when the poison diffuses itself throughout the whole system, and soon destroys the animal, and those of the canine or vulture race that prey upon the carcass are destroyed also.

Narrative.—The first persons in the west, that fell victims to this dreadful disease, were Mr. William Tompkins, an emigrant from my father's neighborhood, (Harwood County, Va.,) and a Mr. Bernard Fowler, brother of Maj. John Fowler, who for many years was the only member of congress from Kentucky, when that state was entitled to one representative only. The two persons were neighbors, and lived on Bank Lick Creek, a branch of Licking River, which empties into the Ohio, directly opposite to Cincinnati; they died about the year 1794 or '5. The disease frequently prevailed about the Forks of Licking, as the country was settled—on Raven Creek, another branch—on Eagle creek, a branch of Elkhorn. The next we heard of it was in divers places in the Green River country, so called, the southern part of Kentucky: frequently in divers other places.

As Ohio began to be settled in 1798, '99 and 1800, up to the years 1836, '7 and '8, this disease made its appearance on the Miamis—on the waters of the Scioto, particularly on some of the branches of Paint Creek. Becoming a residenter of Ohio in 1806, I discovered that the Rattlesnake Fork of Paint Creek, and the upper part of Big Darby Creek, were places most affected with it. Some places on Deer Creek, particularly within four or five miles west of London—also places on Mad River, vicinity of Springfield and Urbana. It again was found in different settlements towards the Muskingum; not confining itself to the *flat* regions of the Miamis, Scioto and other places, it had fixed itself in the hilly regions of Kentucky, on Licking and its tributary streams, and in like manner in the flatter region of the Green River country. So it was in Ohio, some portions of the rolling region of country on Hockhocking and of the Muskingum rivers, were afflicted with it also: and it has been subsequently felt in different parts of Indiana and Illinois.

The Cause.—Like others, for many years, my mind was bewildered as to the cause of this dreadful disease. My business leading me to visit every region nearly of the country in Ohio, I felt great sympathy for the afflicted, and an ardent desire to detect the cause. In 1807, I think it was, Col. Robert Rennick then living on the present site of Springfield, Ohio, an emigrant from the South branch of the Potomac, in Virginia, and a great cattle raiser, began to try experiments. His cattle took it, and he effected a cure, as he said, by administering to each steer a bottle of whisky, about a quart. Indeed, *Captain Whisky*, in those days, was almost a *King-cure-all.* But his remedy, in some instances, failed. He then turned out his cattle, let them range over the prairie and timber lands, and as the frost had nipped the green herbage, he followed his cattle to the timber lands, where he found them greedily stripping the foliage and browsing on a stubby and running vine: after eating this, and on returning home, the cattle took the "trembles." We have frequently springs running from high banks into larger streams, collecting from the savannas back, or from beds of vegetable or mineral substances, or the earth, poisonous matter; but this, I was fully satisfied, was not the cause of what is called the puking-complaint, or milk-sickness; for where it prevailed most, there never was purer or more wholesome water issuing from our mother earth. To Col. Robert Rennick's vine, I then began to direct my attention, and full 25 years were spent in making researches and trying experiments, and to go into detail would be too tedious and unnecessary. I found it necessary to lay all theory aside, and to go on *facts.*

Facts.—1. About 1816, a man living in Indiana on the Ohio river, bruised the vine, extracted the juice, gave it to a cat, and it killed it.

2. The vine grows in every region, where the milk-sickness or puking-complaint prevails. Where the vine is not to be found, there is no disease of this nature. This is a stubborn fact!

3. Calling to see a friend living on Darby Creek, in Ohio, whom I had not seen for twenty years, (Mr. M'Cloud,) in 1832, or '3, he pointed to his wife and remarked:—"She is my third wife, I am her third husband, and in yon graveyard lie 15 of our families taken off by the dreadful disease, the puking-complaint!" "And do you know the cause," said I? "Yes, we have found it out; it is partly a shrub, which, coming in contact with trees, ascends as a vine. I followed my cattle, found them eating of it, and soon taken with the complaint, and some unable to reach home." This awful astounding fact, having before fixed on the vine, led me to make a full disclosure in the papers, which set many doctors, both mineral and steam, by the ears.

4. While the doctors were discussing the subject, and some of them calling my facts in question, a warm friend of mine, John McNeil, Esq., of Frankfort, Ross County, Ohio, a very extensive farmer and grazier, determined on satisfying his own mind, sent out his son to purchase the healthiest steer he could find in the neighborhood, and, to get a good one, paid thirty dollars for it; he

gave the steer the vine, as he informed me; he ate it, and the next morning the steer was found *dead.*

5. Two purchasers of cattle, Messrs. Harrold and Harrod, living in the corners of Clark and Fayette Counties, on the head waters of the Little Miami, I think, had purchased about 120 head: The drove was divided, 60 were placed in a meadow that had been kept clear of shrubbery and vines, and 60 put into an adjoining enclosure, taking in some woodland. The cattle were fed on the same hay and watered from the same well—most of the 60 enclosed in the woodland died. It was winter; snow was on the ground; it was discovered that these cattle had eaten the vine down to the very roots! So this was a *stubborn fact.*

6. A man not far from the same vicinity, by the name of Allen, had a horse that broke out of his enclosure, and ran off into the barrens; he trailed him up, found him browsing on the vine, and had eaten a considerable quantity of it: being vexed at the animal, he caught him and mounted him and rode him home at full speed; this heated the blood of the horse, he took the "trembles," and died!

I could still proceed with statements of facts of like nature; but will in place thereof give—

Vouchers.—The following papers a few minutes ago I laid my hands on, by overhauling some old papers. They have been before published in Ohio, but now taken are from the originals:

I hereby certify, that my father settled upon the waters of Mad River, about the year 1801—that in harvest the cattle took the "trembles,"—that the country was settled some time before the cattle took the "trembles"—[range first eaten on,]—before this "the puking-complaint" was not known among the people—that in cases of cattle having the "trembles" and dying, the manifold of the paunch was dried up—that believing the complaint to be caused by a poison vine, we looked for it, took some of it, and gave it to a calf, and the next morning, (after eating of it,) it took the "trembles." Each of us chewing some, (myself and father,) and it caused the water to run from our stomachs, and we were seriously affected by it; we did not swallow the juice. No one in the country believed it to be the water that caused milk-sickness. The vine described by Mr. Th. S. Hinde is the vine referred to by me.

W. TAYLOR.

Champaign County, Ohio, Aug. 19th, 1833.

We state, that Thomas Parker, a neighbor of ours, from the information given by him, had a cow that, after eating the vine, died. Our father's cattle also died after eating of it. Mr. Schoonmaker and a part of his family died of the puking-complaint. Mr. S. gave a dog a crock of cream, he ate it and it died. The crows, ravens and buzzards that ate the carcass of the cattle of Mr. Schoonmaker died. Our brother, T. Taylor, lives at the place—the water is pure and wholesome.

WM. TAYLOR.

August 19th, 1833. S. TAYLOR.

I do hereby certify, that I lived in Clark county, Ohio, for sixteen years—that I had been uniformly of opinion that the water drank by the cattle was the cause of the milk-sickness or puking-complaint. Having been told to the contrary, and that it was the eating of the poisonous vine produced it, I did not believe it. I then ate a handful; the next day I was attacked with puking, and sick a month; Dr. Neadham of Springfield, attended on me, and I recovered. I now live on Lewis's Reserve, Logan County. JAMES M'MANNA.

August 11, 1833.

Description of the vine.—1. It grows as a shrub, somewhat resembling a hickory or buck-eye bush; when not attached to a tree, grows bunchy or bushy at the top. It is also found clinging to fallen timber, old rotten logs, in wet places, near the edge of ponds, creeks and hollows of hills, frequently around stumps along the road, and sometimes in pastures or meadows. It has a singular leaf with one or two notches or saw teeth on each side.

2. As a vine when it attaches itself to a tree, it runs up as a creeper attaching itself to the body of the tree to a considerable height, and bears a berry, with a buff or brown coat, in bunches, and is minutely described as a vine affecting the vineyards of the Asiatics, and styled by the Arabs "*The wolf grape;*" and by Isaiah the "wild grape." I enclose one or two of its leaves for your inspection. TH. S. HINDE.

Mount Carmel, Ill., Sept. 29, 1838.

☞ The poison vine referred to uniformly has three leaves on a stem—the poison ivy *five*, and notched all round. The wild creeper or trumpet flower, a long stem and many leaves.

ADDRESS OF W. S. MORTON, PRESIDENT OF THE AGRICULTURAL SOCIETY OF CUMBERLAND, DELIVERED AT ITS ANNUAL MEETING, ON THE 12TH OCTOBER, 1838.

Communicated for publication in the Farmers' Register, by order of the Society.

Gentlemen—At our last regular meeting, it was determined, that we should, at each annual meeting, invite some gentleman at a distance, to come among us, and address us, on some subject connected with the great cause which has associated us. This resolution, could it be successfully executed, might be productive of much good. Besides the pleasure afforded from hearing such address, much valuable information might be obtained, and a refined and enlarged benevolence, so dignifying to agriculture, might be diffused. I particularly regret, that in this, our first annual meeting, we have failed to enjoy the aid of the highly qualified gentleman selected for this occasion. And I crave your indulgence, while I offer you, in connexion with this disappointment, only my own efforts at the fulfilment of an official duty.

It has been much the fashion of late, to eulogize the present age, for the amazing developements of the talent for discovery, which it has displayed. And, it has been almost equally common, to remark, that, while the other sciences and arts have been wonderfully improved, and new arts and sciences have suddenly sprung into existence, and risen, at once, almost to the summit of perfection, agriculture, as if depressed by its connexion with the earth, has grovelled in the beaten track of ancient usage, without improvement. While I cannot subscribe to the truth of the ob-

servation, at least to the full extent, I believe there are reasons, arising out of the nature of man and the constitution of society, which will account for, and excuse any delinquency in this noble pursuit.

In order to secure the utmost exertion of his faculties, man has ever needed the powerful aid of concentrated action, and to be stimulated by the hope of success. While governments have carefully encouraged and rewarded enterprise, in other pursuits—with a few honorable exceptions—they have either embarrassed agriculture, by awkward attempts to afford aid, or positively depressed her, by unjust exactions, or unskilful interferences with her concerns.

From the nature of most other pursuits, their votaries can easily assemble, either for the purpose of regulating prices, appealing to government for aid, consulting for their common good—or they can, with comparative facility, change the place of residence, and adapt their labors or commodities to the state of the market. While the scattered condition of agriculturists, the expensive preparations of internal improvement and other adaptations for their common benefit, the conflicting interests arising from locality, and the sacrifices connected with removal, render most of these objects almost unattainable. The nature of the employment too, requiring such multitudes to be engaged in it, in order to secure food for the race, while it also demands, for great success, such high attainments in science, from its votaries, constitutes another serious obstacle to its improvement.

For the highest success in agriculture, diligent study of its theory, and application to its practice are indispensable. It is true, that many very thriving farmers hold the former in great contempt. But the simplest operation in husbandry has its reason, or, in other words, its *theory*—and whether this is learned from books, derived from the instruction of others, or from personal observation, it is still *theory*, and leads to the practice. The reason why theory in agriculture has fallen into disrepute, is plain: those who make the greatest noise about it, are apt to be speculative, visionary men, who dream of deriving splendid profits, from the wildest schemes, while they have not the industry and perseverance to execute the simplest. The case is the same in all professions. Whenever they get filled with incompetent men, whose high pretensions are betrayed and their ignorance exposed, by their blundering performances, the undiscerning lose confidence in the science they profess, and prefer the boldest empiricism, provided it be not directed by *book-learned theory*. And, perchance, they may fare as well with the one, as with the other. But, sound learning, guiding a conscientious and diligent practice, in agriculture and all the other avocations of man, will always, eventually, secure the approbation and encouragement of strong-minded and judicious men. It is the doom of man to attain high enjoyment and profit, only by ardent and persevering exertion. From this, the agriculturist may not expect exemption. His profession, to attain the dignified station it may claim among the arts of men, should draw for its principles, from the whole round of physical sciences, from the purest morality, and the sublime truths of religion; requiring—for a thorough knowledge of it—perhaps a more arduous course of study and preparation than any other.

For the removal of evils and difficulties of a general nature, the formation of agricultural societies has been resorted to. These, if properly constituted and diligently attended, may effect much good, in the sphere of their action. But, from the nature of the case, they must, for the accomplishment of the grand purposes required by the general interests of agriculture, be entirely impotent. They, moreover, generally die in infancy, for want of nursing. It would be a waste of time, to remark upon the incompetency of our political legislatures, for this purpose. Nothing but the formation of bodies, for the special business, possessing both power and means—something like the Agricultural Board in England, or the Highland Society in Scotland—can be efficient. Such a body of men might be employed, among other things, in ascertaining and recommending suitable routes for roads and other channels of conveyance for the products of agriculture and manures for the improvement of the soil. The time is speedily coming, when the great benefit of lime, gypsum, bone-dust, poudrette, animalized carbon and many other new manures, will be generally admitted and desired. In the present miserable state of internal improvement in Virginia, it is no matter for surprise, that our husbandry should be so defective. From the splendid schemes of extended navigation and rail-ways, now in agitation, we, in this region, are likely to derive but little benefit. We need improvements more limited in their objects and extent. For instance, if a good rail-road, or even a turnpike, so nicely graduated and well constructed, that a good team might draw on it ten thousand pounds, were made from Lynchburg, or some more convenient point on the river below—along one of those fine ridges on the south or the north side of the Appomattox to Farmville, it would afford to some of the valley counties and several counties on this side of the Blue Ridge, a more extensive market for many of their commodities, such as butter, cheese, tallow, wool, honey, domestic linen, &c., while we might be enabled to procure lime for manuring on remunerative terms. Until lime can be procured, at a much lower price than it has heretofore commanded, and our roads and other means of transportation are vastly improved, and until a much greater proportion of our population are engaged in other than agricultural pursuits, there can be no hope of elevating our husbandry to the highest grade. For while these advantages are denied to us, we are almost compelled, as a body, to grow tobacco, for a market crop. This consumes more manure, and more time and attention, than any other. And the benefit of a meliorating rotation of crops, and of almost every other improving method of culture, is placed beyond our reach.

But, the consideration of these general matters, over which we have no control, may be waived, while we attend to those coming more particularly within our province.

Most of us cultivate, on the belt of gray hickory land, extending, in length—with a variable width—from about the mouth of Deep Creek, in Powhatan, to the head of Bush River, in Prince Edward. It is the region, for which the late John Randolph, of Roanoke, said, that God had done more to bless, and man more to destroy, than for any country he had ever seen. Its pe-

culiar characteristics show more strikingly on the Guinea Creeks, than elsewhere, and hence it has usually been called the Guinea vein of land. It is quick, free land, and, after exhaustion, has a wonderful power of resuscitation. This is evinced, even to the eye of the passing stranger, by the quantity of hickory, dog-wood, red-bud and walnut, interspersed among the old-field pines. It is well adapted to the production of corn, tobacco, oats, nearly all the minor crops, and yields wheat much better than would be supposed from the sandy nature of the soil. The spots of red land interspersed through this region, yield wheat finely, as do most of the fields with a red clay substratum, if not too much exhausted.

Feldspar is the most abundant rock, in the bowels of the earth, in this belt of land. The potash, usually found in this rock, may afford to the soil its peculiar fertility when fresh, and its capability to be improved when impoverished, as also its adaptation to the growth of tobacco; for this plant contains much potash in combination with nitric acid. This may also account for the free and improvable nature of much of the other lands between tide-water and the mountains, denied the use of lime. There is, however, generally a little lime in feldspar; but hardly enough to account for the fact stated. Potash, as is well known, enters largely into the formation of vegetable matter, and, being an alkali, may neutralize the acid, in the soil. This theory is apparently contradicted by the fact, that on much of our land most abundantly supplied with feldspar, we find the rankest growth of sorrel, and every indication that the land is greatly poisoned with acidity. It may readily be observed, however, that in such places, the feldspar is harder than usual, and of course, gives off its potash more slowly by decomposition, and, lying very near the surface, whenever the interstices between its strata become surcharged with water, this must ooze into the soil, and produce acidity by its putrefaction. In most cases, deep and well-formed hill-side ditches, and other means of preventing the stagnation of water—which I believe to be the most usual cause of acidity in land—would correct this evil. In many places, there are marshes at heads of bottoms and on hill-sides, produced by strong bars of feldspar, running across the declivity and stopping the current of water. These may be removed, by cutting deep channels through the beds of rock, and forming blind drains for the passage of the water. About these ledges of feldspar, I think, there will generally be found a yellowish-brown clay, resembling that on which the lie of ashes has been spilled, which effervesces freely with acids. We frequently see clay of this appearance, in our roads, near beds of feldspar, but I have never exposed any of it to the action of acids.

I have thought the agency of feldspar in fertilizing our lands, not unworthy your attention, and regret that I have not given it a more satisfactory investigation. As a geological fact it is certainly of some importance; and in agriculture, it will be pleasing, if we can ascertain, that we have, incorporated in our soils, a substitute for lime, though greatly inferior to it; which, though it may not bear transportation to much distance, tends constantly, under proper management, to correct acidity, and of course, according to Mr. Ruffin's ingenious theory, prepares the land to receive benefit from plaster. In all those soils, coming under my observation, where plaster has failed, there is a perfect destitution of feldspar, and I do not now recollect a case of failure, where it exists. But I know my observation, in this matter, has been too limited, to justify my undertaking to lay down rules.

We have also, almost every where in our region, the detritus of hornblende, in the form of bottle-green or black-sand, and, in many places, that of green-stone, in the form of a light pea-green sand. A striking sample of this may be observed in the Guinea road, on the hill-side north-east of Felixville. Both of these are intrinsic evidences of good constitution in the soil, or, at least, warrant the hope of improving by clover and plaster.

Having consumed, perhaps, too much time, with the foregoing remarks, connected with the politics and philosophy of agriculture, I shall have the less space left for remarking on the practice. I have but little cause to regret this, as most of my hearers are much better acquainted with this department of our subject than myself.

The practice of agriculture may be divided into those processes which are intended to preserve and improve the soil, and those intended to protect, to cultivate and to preserve the crops. As we have no time for minute details, and as success in the cultivation of crops depends so much on the improvement of the land, we will attend chiefly to this matter.

In the improvement of land, manuring is the leading process. Indeed, it is the source from which all permanent success in agriculture must flow. Without it, the lands must constantly deteriorate and the crops diminish; while both will improve, if manuring is judiciously and diligently conducted. No man, without a trial, could form an adequate estimate of the quantity of manure which might be made in one year, by a moderate force, applied simply, to what may be termed the *main force of gathering*, from the leaves of the woods, the offal of the crops, ashes, marsh mud, and all other substances convertible into manure. But when to this is added a judicious system of enclosing and rotation of crops, and a skilful apportionment of the quantity of land yielding cattle food, and of the number of cattle, to the wants and means of the farm, the quantity of manure and the increase of fertility—compared with ordinary attainments, in these matters—become amazing.

A manure, pen or stercorary, in a suitable place, into which the children of the family are employed in accumulating weeds and other litter, to be rotted and enriched, by being sprinkled with the dirty slop-waters from the kitchen, the refuse soap-suds, and all other filthy fluids, usually thrown away, would produce a large and rich addition to the manure of the farm. This, however, might generate disease, unless great care be taken to scatter ashes, frequently and liberally over it. These would combine with and neutralize the unwholesome effluvia, and greatly improve the quality of the manure.

Much of the manure, in this country, is lost, by being permitted to lie in heaps during hot weather, burning with fermentation, and steaming off its richest gases. If it be not demanded for some

hoe-crop, it would be much better to use it as top-dressing on grass. Thus employed, in dry weather, instead of fermenting as it would in a bulk, it simply loses its moisture, and, in wet weather, its soluble matters soak into the earth, and greatly benefit both the grass and the soil.

If, however, manures are kept in heaps, in hot weather, for the purpose of decomposing their coarser materials, they should be largely mixed, with common earth, sand, clay, or, which I think much better, with the broken coal and burnt earth, from the sites of old coal-kilns. Such admixture causes a more gradual and steady decomposition, and prevents what the Scottish farmers call "*fire-fanging*," viz.: the moulding of the manure, which renders it so light, chaffy and worthless. If I have not been greatly deceived, in a small experiment with the charcoal, it does vastly more than this. It arrests and retains the volatile effluvia of the manure, effectually removing its scent, and forming a chemical compound, in which both ingredients are fitted for the food of vegetables. If any mode of rendering charcoal soluble, could be discovered, it certainly would constitute a fine food for plants, as they all contain so much carbon. It appears to me, that no substance, so easily attainable among us, promises so fairly to become a substitute for lime as charcoal. They have both the same greedy appetence for putridity, taking the smell out of every thing. And while they both long retain the matters with which they are combined, they may equally be disposed to yield them, to the roots of plants, as food. They both, certainly, enter largely into the composition of vegetable matter. As I before observed, my experiment with charcoal impregnated with putrefying animal and vegetable matters was small. I intend to repeat it, with more care, and I would thank any gentleman who will give it a fair trial.

While on the subject of manuring, it may be well to remark, that although we cannot afford to use lime largely, yet it might be profitable to employ it on a small scale. A valued friend, who is a member of this society, informed me, that after washing his seed in brine strong enough to float an egg, that the spelt, cockle, &c., might be skimmed off, he rolled it in lime, and sowed it; sowing a stripe through the middle of the lot, without lime. At harvest, in his own judgment, and that of others, in whom he confided, the wheat whose seed was limed, bore one-third more crop than the other. In this experiment there was one bushel of lime used, to ten of wheat. The experiment is richly worth repeating, if we only aim to get rid of such nuisances as cockle, cheat and spelt—but the whole process is the best that has been discovered, for preventing smut.

Volumes might be written on the improvement of agriculture, gentlemen, and I intended to touch on many other branches of this subject, but having already imposed a tax on your patience, and being unable to furnish you with any matter, with which you are not already familiar, I must conclude.

There is, however, one subject, which I must not neglect. One leading object of our association is, "to increase the ties of good feeling, which already so happily bind us together." If we attain this we shall not have united together in vain. This seems to be, emphatically, the age of discord, and the furies seem to be let loose in the hearts of men. The demon of party has enlisted even the most peaceable, and has made veterans of those who were once child-like. To what extent the fiery fanatical passions of men may rage, is left in awful doubt. But there is much reason to fear that new storms are rising, and will rage, until all that is lovely and desirable among men is destroyed. Be this as it may, the time is coming, when he who can feel that he has honestly endeavored to promote "peace and good-will among men" will possess a jewel of complacency in his heart, worth more than all the diadems of all the conquerors that have lived upon earth. May every member of this society enjoy this blessedness! And may we remember, that while the first and great commandment is, to love God, "the second is like unto it, namely, thou shalt love thy neighbor as thyself."

AN ADDRESS DELIVERED BEFORE THE ROCKBRIDGE AGRICULTURAL SOCIETY, AT ITS ANNUAL FAIR, OCT. 11TH, 1838.

By Geo. D. Armstrong, A. M., Professor of Natural Philosophy and Chemistry, in Washington College, Lexington, Va.

Communicated for publication in the Farmers' Register, by order of the President and Directors of the Society.

Gentlemen of the Agricultural Society,—The subject which I have selected as affording a theme suitable for the present occasion, is—the value of natural science to the farmer. The practical rules of agriculture, and the best methods of cultivating the great staples of our country, would have afforded a more appropriate subject, had I felt myself competent to the task. But with my imperfect acquaintance with those matters, any attempt to communicate information to the members of this society, must have proved worse than useless. The importance of agriculture to the prosperity of our country, and the honor which is due to the independent American farmer, would have afforded a theme in the highest degree grateful to my feelings; but its discussion could not have been of any real value. In such a country and in such a state of society as ours, where the farming part of the community are acknowledged to be "the bone and sinew of our strength," that class upon whom more than upon all others, our national prosperity depends, the poor tribute of my praise, could neither make them more honored in fact, nor to feel themselves so. Precluded as I am from the discussion of either of these subjects which would have been most appropriate to the occasion, I will be pardoned for selecting a theme, which in other circumstances I should have left untouched.

The system of agriculture pursued in this section of country has, within a few years, undergone a change for the better. Whilst a country is new, presenting a deep rich soil, which has never been vexed for the support of man, it makes comparatively little difference in what manner it is tilled. All that is necessary is, to bury the seed in the earth, and in due time to gather home the golden harvest. But if a careless system of agriculture be pursued for a time, the soil becomes gradually exhausted. Instead of gathering an abundant

crop almost without labor, the farmer is compelled "to eat his bread in the sweat of his brow." From year to year, whilst the amount of his necessary labor is increased, the return for those labors becomes more and more scanty; until at length a point is reached at which the only alternative left him, is to change his system of cultivation, to emigrate, or to starve. There are portions of our southern country which have nearly reached this point—and the tide of emigration is fast sweeping off their old population to the new countries of the west and south-west, those lands of promise. Accustomed for many years to a certain routine of farming operations, they either would not, or they knew not how to change it for a better. The valley of Virginia, possessing as it does a soil which it is difficult if not impossible entirely to exhaust, has never become impoverished to such an extent;—yet, even from the valley of Virginia, not a few have sought a home in the distant forests of the west. Far be it from me to call in question, either the policy of such a movement, or the patriotism of those who have made it;—doubtless they have found a richer soil; and having carried our free institutions with them, wherever they have gone, they still possess all that which most endears his native state to the bosom of a Virginian. But those who remain behind have a work to perform. By long cultivation the soil has become so much exhausted, that it is necessary for our systems of cultivation to be improved, if we wish still to see "smiling plenty reign in the home of our childhood." Instead of making it, the one absorbing question, how can I get the largest return from my lands this year? our farmers must inquire, how can I get the largest return in a series of years? how can I permanently improve my lands? This I suppose every one is ready to admit; but then the question arises, how is this change for the better to be effected? in what way are our lands to be improved? in what respects ought our systems of cultivation to be changed? It is not difficult to mention some way in which lands may be improved, and some particulars in which our systems of cultivation might be changed for the better;—but to give a correct and full answer to these questions, to state in what manner lands may be permanently improved to the best advantage, and how our systems of cultivation may be changed, so that a given portion of land shall yield the largest return, with most certainty, least labor, least detriment to the soil, is a task which it is impossible to perform at the present day; and we can hope to do it only after long-continued and careful study of the subject.

It is at this point that natural science may be advantageously introduced to assist us in our labors. I know that in time past, while men have acknowledged the importance of applying science to the arts, and in fact to almost every-thing else, they have doubted the value of its application to agriculture. Is this a reasonable doubt? What do we mean by natural science? As I understand it, we mean nothing more nor less, than our knowledge of nature arranged and generalized. Our knowledge on all subjects is, in the first instance, a knowledge of individual facts. After a stock of facts has accumulated, we perceive that many of them are of the same character; these we class together, and include them under a general statement. Again, we observe that some of these facts bear to others the relation of cause to effect, and we arrange them in accordance with this observation. This once accomplished, our knowledge has become science. By this process, the form, and not the nature of our knowledge is changed. Scientific principles are nothing more than human knowledge packed up in a portable form. Founded as they are upon our observation of nature, their application to the affairs of life, is one of the very best methods of testing their truth.

To the arts, and to almost every other business of life, natural science has been applied with the happiest result; and is there any thing which forbids the hope of its being applied to agriculture with equal success? There are departments of physical science, which apply as naturally and as directly to the business of the farmer, as mechanical or chemical philosophy do to the business of the artizan. Such are mineralogy, geology and vegetable physiology. One great object of mineralogy and geology is to enable us to determine the character of soils, to ascertain the elements which enter into their composition, and the proportions in which they severally enter. No one has ever doubted that the difference between a fertile and barren soil, lies in a difference in their composition. There are some combinations of the elements of soil, which seem particularly adapted to the growth of plants, whilst there are others which will scarcely support a scanty vegetation. A piece of land may be rendered barren, either by the absence of some one or more of the elements of good soil, or by the presence of some noxious principle. If the former is the case, it is to the interest of the possessor to supply the deficiency; if the latter, to remove the noxious principle. But how shall he set about this work, unless he know whether it is the absence or the presence of an element which renders his land barren, and also what that element is? Lime and vegetable matter are our two most common manures. To make it a general question, as has sometimes been done, whether lime or vegetable matter is the best manure for land, is very much like making it a general question, whether fire or water is the best agent for doing work. Unless the nature of the work to be done is specified, it is impossible to answer the question. For smelting iron fire is the best, and water is good for nothing; for removing a stain from linen water is the best, and fire is good for nothing. So it is with respect to manuring; it is necessary that we should know the nature of the soil, before we can determine the proper method of improving it. It is (as I have already mentioned) one great object of mineralogy and geology to enable us to ascertain the nature of soils; the former, teaching us to distinguish them by their external characters, the latter by their position.

Let this suffice for mineralogy and geology, I wish to direct your attention mainly to vegetable physiology; a department of natural science, which has hitherto been little valued and little understood; and yet one which applies more directly to agriculture than any other. Under the title of vegetable physiology, is comprehended whatever is known respecting the structure of plants, and the history of vegetable life; embracing our knowledge of the nature of the organs of plants, the

offices these organs perform, the manner in which they perform these offices, and the changes which they naturally undergo, or which they may be made to undergo by the art of man. Its object is to lay open the machinery of vegetable life, and to explain the manner in which that machinery operates. In order the more distinctly to illustrate the application of such knowledge to practical agriculture, I will select that which concerns one subject; viz: the circulation of the sap. We all know that plants are nourished by their sap, just as animals are by the blood which circulates through their veins.

If we inquire for the point at which the sap enters a plant, we find it to be the root, but not all parts of the root alike. There is a peculiar class of organs whose office it is to absorb nourishment from the soil; and these are situated along the fibres or smaller subdivisions of the root, of course it is at these points and no others that the sap enters. Let us see if we can make any practical application of this knowledge. If we wish by manuring to assist the growth of a tree, we should place the manure at some distance from the point at which the trunk enters the ground, so that it may lie as nearly as possible over the fibres of the root. If we wish to plant a vine so as to twine around a tree and be supported by it, we should plant it very near to the point at which that tree enters the ground, rather than at the distance of several feet from it; because in this way the two will interfere least with each others growth. If we wish to transplant a tree we should be more careful about the extremities, than about the main divisions of the root. If the root have several branches, it is better to cut off all those branches excepting one and retain that with all its subdivisions perfect, than to cut off the ends of all the branches, as is the common practice.

Again; if we trace the course of the sap during the different seasons of the year, we find that in such trees as the oak, the hickory and the chestnut, it circulates principally in the sapwood during the spring and summer, but during the autumn and winter it retires to the heart-wood and not to the root, as is generally supposed. In order to satisfy ourselves of this, nothing more is necessary than to take a part of the body of a small tree cut in the spring, and of another cut in the winter, and lay them on the fire. The sap will be seen to exude in the first from near the surface; in the second from the heart. Let us see if we can make any practical application of this knowledge. It is generally acknowledged that, that most destructive disease in timber called the dry-rot arises from the presence of the sap. It is generally the heart-wood which we use for timber, whilst the sap-wood is considered of little value. If then the situation of the sap at different seasons is such as I have just mentioned, in order to get our timber free from the sap, we should cut it in the summer and not in the winter. The course thus indicated is, I know, in direct opposition to the common practice of men. As this is a matter of some practical importance, permit me to cite one fact in confirmation of the rule which I have laid down. The fact is mentioned in connexion with many others of a similar character, in a communication from a very intelligent ship-carpenter to one of our scientific periodicals. "In accordance with the common practice of ship-carpenters I was in the habit of cutting my timber in the winter. During the summer of 1820, when engaged in framing a vessel, I found I had no piece which was suitable for a certain place in the frame. It was necessary that the work should go on, and as the only alternative left me, I sent immediately to the woods and had a suitable stick cut; this I framed in with the others. After several years the vessel was sent back to me to be repaired. On examining her side timbers, I found them all more or less affected with the rot, excepting this one, whilst it was perfectly sound."

Again; if we inquire into the nature of the sap, we find that as it enters the vegetable system, it consists mainly of water holding carbonic acid gas in solution. Water has the power of absorbing large quantities of certain gases, whenever it is brought in contact with them. Strange as it may seem to those who have never thought much on the subject, water is porous, and absorbs these gases just as a sponge absorbs water. The great object of manuring, in most instances, is to supply carbonic acid gas to the growing plant. A large portion of this gas is liberated from vegetable matter during its decay; and hence the value of such matter as manure. The gas furnished by the manure, must be absorbed by the water, as it sinks down into the ground. Of course, the water should meet the manure before reaching the roots, and not after it has passed beyond them. This would suggest that the manure could be placed to the best advantage upon the surface, because then the water must pass through it before meeting with any of the roots. But, then, there is a difficulty arising from another source. The valuable material furnished by the manure, is furnished in the form of a gas. If the manure is placed upon the surface, it soon dries, and whilst in that state, as the gas is liberated, no water being present to absorb it, it is soon dissipated in the atmosphere. The two facts taken in connexion, suggest that the manure should be placed as near the surface as is consistent with its being kept in a moist state, and in every instance, above the roots of the plant which it is intended to benefit. Where manure is spread upon the ground in the fall to benefit a winter crop, it should be placed very near to, if not upon the surface; where it is spread in the spring or early part of the summer it should be always covered with earth.

Our knowledge of the nature of sap, enables us to explain the manner in which clover improves land. Had we no experience on the subject, it would seem, to say the least, improbable that any crop could improve land. We would naturally suppose that plants were nourished by the ground itself—that they fed upon the soil. If such be the case, when a crop is ploughed under and decays, it can give nothing but what it has first taken; and how then can it improve land? Yet we find that growing clover upon land, and then ploughing it under and suffering it to decay, is one of the very best methods of improving land. Bearing in mind the nature of the food of plants, this admits of a simple explanation. We will suppose that clover is sown upon a perfectly barren spot. The atmosphere which is above this spot, contains a portion of carbonic acid gas, for all atmospheric air contains a greater or less portion of it. A rain comes; as the rain falls, it absorbs a por-

tion of this gas, and in this condition enters the ground. No sooner does it come in contact, with the seed in the first instance and with the root afterwards, than it is absorbed and its materials used for increasing the size of the vegetable structure. When the portion of air above the spot, has in this way been exhausted of carbonic acid, a supply is obtained from the neighboring portions, in consequence of that strong tendency which gases manifest, to intermix and diffuse themselves throughout each other. This process is repeated again and again, and thus the clover increases in size. Perhaps some one may ask, from whence is this gas obtained in the first place? From many sources, but principally from decaying vegetables, such as are found in the woods and along the fence sides. The quantity of the several elements which enter into the composition of our globe, is fixed; it is impossible for man either to increase or diminish this quantity, and it is equally impossible for him to convert one of these elements into another. All he can do is to make an economical use of that which already exists, to gather up those portions which subserve no valuable ends, and apply them to use. This is what the farmer does in sowing his land with clover. He impresses the very wind into his service, for every wind that sweeps over a field of clover, laden as that wind is with the materials of vegetable structures, is made to contribute to its growth. After a large portion of vegetable matter has, in this way, been collected upon the once barren spot, it is ploughed under and secured for future use.

Again; in absorbing nourishment from the earth, the roots of a plant do not seem to exercise any choice; but drink up every thing presented to them in a sufficiently fluid state. This we learn from actual experiment. Almost any substance which is soluble in water, may be made to enter vegetable systems. After a heterogeneous mass is thus taken up by a plant, such portions as are suited to its nourishment are retained, whilst such as are not suited, are returned to the roots, and by them again deposited in the soil. From observation, we learn that the matter thus rejected, is thrown back in such a state as to be not only unsuitable to the nourishment of the plant (rejecting it) but positively deleterious. It has also been ascertained, that the substances rejected by different plants differ from each other; and this to such an extent that the matter rejected by one plant, is well adapted to the nourishment of another. With a knowledge of these facts, we can assign the reason, why it is not a good plan to sow the same crop upon the same pieces of land for several years in succession. It will not do to say (as is often done) that a second crop of wheat will not grow as well upon the same spot, as the first, because that spot has been so much exhausted by the first. This is, it is true, one reason; but if it be the only reason, or even the principal reason, why is it that a crop of corn succeeds so well? The failure in the second crop of wheat, arises not so much from the exhaustion of the soil, as from that soil's containing a portion of matter positively deleterious to the growth of wheat, and which was deposited by the first crop. At the same time this matter is not injurious to the growth of corn, and hence the crop of corn is almost as good as it would have been, had wheat never been sown upon the land. If we could ascertain the precise character of the matter which is retained, and of that which is rejected, by each of the several crops commonly cultivated, it would be an easy matter to determine the best order in which crops can succeed each other. Perhaps too, if this subject was better understood, we should find that the way in which some manures benefit crops, is not by supplying nutritious matter to them, but by removing this deleterious matter from their roots. If this matter possess the character of an acid, as it is more than probable it does in some cases, lime would act in this way. Being a salefiable base, it would unite with the acid and neutralize its properties.

I might go on and multiply instances such as these, did the occasion call for it: but as my object is, not to give a lecture on vegetable physiology; but by illustrating its application to agriculture, to show its importance to the farmer, these will suffice. Perhaps some one may ask, if scientific principles are nothing more than facts, arraged and generalized, why is it, that knowledge in this form, is more valuable, than in the form of unconnected observations; the form in which this knowledge is at first obtained?

There are several reasons. Knowledge in the form of science is more easily retained, and is more perfectly at the command of the possessor, than it can possibly be, in the form of unconnected observations. I doubt not that the experience of every one here will confirm the statement, that it is easier to remember fifty effects, when we can trace them to one common cause, than it is to remember five, when we can trace them to no cause. A knowledge of the cause of any number of effects, serves as a band, by which they are bound in one common bundle, and thus secured from being scattered and lost. It is one of the characteristics of science, that the relation between cause and effect is distinctly traced out.

Another reason why it is desirable to have our knowledge in the form of science is, that in this form it will serve to direct us in our course of experiment and observation. Such is the constitution of nature, so intimately are the various parts of creation interwoven, that a cause generally gives rise to several effects. When we have traced an observed effect back to its cause, we can generally infer other effects, which will spring from the same cause; and these often of a character entirely different from the one first observed. To illustrate my meaning by an instance. In attempting to sink a pump to an uncommon depth, it was found that the water could not be raised by it, to a height greater than 32 feet. The cause of the rise of the water was ascertained to be the weight of the atmosphere. The reason why the water would not rise to a height greater than 32 feet, was that the weight of a column of our atmosphere was only equal to that of a column of water of the same diameter, and 32 feet high. It was at once inferred, that as the weight of the atmosphere was fixed, it must sustain columns of different liquids at heights, inversely proportioned to their specific gravities. And again; that as we rose from the level of the sea, leaving as we must, a part of this atmosphere behind us, the height at which a column of any liquid would be sustained, must diminish in proportion to our rise. Thus by tracing the refusal of a pump to act in

certain circumstances, to its cause; we ascertain, in the first place, a method of determining the specific gravity of liquids; and in the second place, a method of determining the height of mountains. The effects by which we determine these things, spring from the same cause as the refusal of a pump to act, and yet they are of such a character that we never should have dreamed that there was any connexion between them, had we not traced them to their common cause; and more than this, we should probably have remained long in ignorance of the two last mentioned effects, had we not traced the first to its cause. Thus it is, that throwing knowledge into the form of science, is like putting it out at compound interest.

Another reason why it is important to have our knowledge in the form of science, is that in this form it will greatly assist us in observing facts, and collecting information. When the attention has been directed to any particular subject, facts connected with that subject are observed and remembered, which, in other circumstances, although they might have passed before the eye, would have made no impression on the mind. Let a farmer and an architect travel together, through the same country, you will find that although they must have seen the same things, yet they have brought home with them entirely different kinds of information. The farmer can give you an account of the soil, the condition of the crops, the methods of cultivation, &c.; whilst he can tell you little or nothing of the structure of the buildings which he has passed. The architect, on the other hand, can give you a minute description of every principal building on the way; whilst he can tell you little or nothing respecting the crops. This difference arises entirely from the fact, that these two men have had their attention previously directed to different subjects. By throwing our knowledge into the form of scientific principles, we get a number of subjects worthy of attention, distinctly out before the mind, and each of them will be a nucleus around which knowledge will naturally collect.

Such are some of the arguments, which urge a study of natural science upon the farmer. The want of success, which has in many instances attended the efforts to apply science to agriculture, may be brought forward as an objection, by some. To such I would answer, this want of success is to be attributed, in part to the present imperfection of those sciences which most naturally apply to agriculture; and in part also, to the visionary character of many of those who have hitherto made the attempt. If you will consult the history of the application of science to those of the arts to which it has been most successfully applied, you will find that this has been a misfortune which has happened to them all, in their infancy. Visionary men being the lightest part of society, seem always to rise to the top; and rising science, like the rising sun, is forced to shed its first rays upon those barren spots, where it is impossible that any thing should grow. Let it rise higher, and pour its flood of light upon the rich valleys below, and if it cause not these to spring with life and verdure, then may you fairly call its claim in question. If the attempt has failed hitherto, in consequence of having been made by visionary men, the greater is the necessity that sober, substantial, practical men should now take the matter in hand.

Much has already been done in Virginia for the advancement of the interests of agriculture. A geological survey of the state is now in progress. An able periodical, devoted exclusively to diffusing information respecting the best methods of cultivating and improving land, has been established, and thus far well sustained. And last, though not least, societies such as that whose aniversary we to-day celebrate, have been established in many parts of the state. Thus far it is well. There is yet another, and, as it appears to me, an important step to be taken. The nature of that step and my reasons for believing it important, I have presented before you. "I have spoken as unto wise men, judge ye what I say."

Every inducement is held out to the farmer of the valley to improve his land and his system of cultivation. Who that looks upon the inexhaustible water-power of our state, and at her vast mineral resources; the iron and the coal, which the hand of a bounteous Creator has so lavishly bestowed upon her, can doubt, that she is yet to become one of the principal manufacturing states of the union. Thus will she possess within herself a market for all that her farmers can produce by the most skilful cultivation. The James River improvement will soon open a grand highway, from the valley to the very centre of this market. Our climate is well adapted to the growth of every species of grain; our soil is already good, and susceptible of the highest degree of improvement. What then is there to forbid the hope, that the valley of Virginia may yet rival in fertility the fairest portions of the west? Let our farmers but improve the advantages which they have; let them engage in earnest in this work, and this hope must soon become a reality.

The traveller as he rests for a moment on the top of yonder mountains, will cast his eye over a broad land of golden harvest. As he descends and mingles amongst us he will receive the hospitality of an intelligent, a blest, a happy people. The inhabitant of the valley has already much to rejoice in. He trembles not before the chill wind of the north, neither is he striken down under the oppressive heat of the south; surrounded by a scenery so grand and beautiful, that no part of the country can boast a superior; possessed of a mount-girt home, such as has always been the strong hold of the freeman, let him but add to these, that fertility which he can bestow upon the soil, and with an honest pride may he exclaim, my own, my native valley, is the fairest spot on which the sun shines.

From the Genesee Farmer.

SPANISH CHEESE PUMPKIN.

Mr. Tucker—If you think the following notice of an agricultural production worthy of a place in your paper, you are at liberty to insert it.

I have the present season, from the planting of one pumpkin seed, raised twenty pumpkins, weighing in the aggregate, 671 pounds.

The six largest weighed as follows: 71, 71, 70, 62½, 60, 57½, making 392 lbs.; 14 others weighed 279 lbs., making 671 lbs. Whole length of the the vines, 989 feet.

They are of the kind called the Spanish cheese pumpkin, yet, notwithstanding the name, they are evidently a winter squash, not as rich in quality as some of the smaller kinds, but much richer than the common field pumpkin, and may, with proper care, be kept through the winter.

ISAAC CURTIS.

Brighton, Oct. 10, 1838.

PREMIUMS AWARDED BY THE AGRICULTURAL SOCIETY OF ALBEMARLE, 2D AND 3D NOVEMBER, 1838.

Horses.

To Col. William Woods, for his stallion Clarence, the first premium of - $15
To George W. Craven, do. do. Gen. Warren, the 2d do. - - - 10
To John Rodes, do. brood mare Rosina, the 1st do. - - - - 10
To Stephen Price, do. do. 2d do. - - 8
To William Garth, for his 3 year old gray colt, by Graybeard, the first premium, - 6
Do. do. 3 year old sorrel colt, by O'Kelly, the 2d do. - - - - - 5
To Col. William Woods, for his 3 year old black filly, by Murat, 1st do. - - 5
To Captain Thomas Davis, do. do. sorrel do. by Goliah, 2d do. - - - 4
To William Tompkins, for his 2 year old gray filly, by Oscar, the 1st do. - 5
To Reuben Lewis, for his 2 year old filly by Murat, 2d do. - - - - 4
To William Gilmer, for his yearling filly by Terror, 1st do. - - - - 5
To Col. William Woods, for his bay filly by Murat, 2d do. - - - - 4

Cattle.

No bull over 4 years old exhibited worthy a premium.
To Jesse Garth, for his full blooded Durham bull, Major Downing, under 4 years old, the first premium of - - - $5
To Gen. J. H. Cocke, for his full-blooded Durham bull, Young Patrician, under 4 years old, 2d do. - - - 4
To Gen. J. H. Cocke, for his full-blooded Durham cow, Cindarella, 1st do. - 6
To Jesse Garth, for his full-blooded Durham cow, Roanoke, 2d do - - - 4
To Gen. J. H. Cocke, for his full-blooded Durham heifer, Dowager, 1st do. - 5
To Nelson Barksdale, for his spotted heifer, by his full-blooded Devonshire bull, 2d do. - - - - - 4

Sheep.

To Reuben Maury, for the best ram, - $5
To William Garth, 2d do. - - - 4
To R. Maury, for best pen of ewes - 5
To William Garth, for 2d do. - - 4

Domestic Manufactures.

Woollen, and Cotton and Woollen Goods.

To Mrs. John Rodes, for the best piece of flannel, all wool, - - - $5
To Mrs. John H. Craven, for the best piece of flannel, wool and cotton, - - 3
To Mrs. William Woods, for the 2d do. do. 2
To Mrs. Jesse Garth, for the best piece of carpeting, - - - - - 8
To Mrs. Peter McGee, for the best hearth-rug, - - - - - 4
To do. do. 2d do. - 3
To Mrs. John H. Craven, for the best piece negro winter clothing - - - 6
To Mrs. Sarah Woods, for the 2d do. - 5
To Mrs. George M. Woods, for the 3d do. - 4
To Mrs. Jesse Garth, for the best wool and cotton counterpane, - - - 4
To Mrs. Jesse Garth, for 2d do. do. - 3
To Mrs. Robert Gentry, for 3d do. do. - 2
To Mrs. William Woods, for the best pair woollen socks, - - - - 2
To do. do. 2d do. do. 1
To Col. William Woods, for the best suit home-made clothes, - - - 10
To Dr. Jno. R. Woods, 2d do. do. - 8
To Richard D. Sims, 3d do. do. - - 6

Cotton and Linen Goods.

To Mrs. R. D. Sims, for the best piece of negro shirting, - - - $5
To Mrs. Dr. Brown, do. 2d do. - - 4
To Mrs. R. D. Sims, for the best piece shirting or sheeting, - - - 5
To Mrs. Col. Woods, do. 2d do - - 4
To Mrs. Peter McGee, for the best cotton counterpane, - - - - 3
To Mrs. M. Johnson, do. 2d do. - - 2
To Mrs. Dr. Brown, for the best piece flax and cotton diaper, - - - 5
To Mrs. Col. Woods, do. 2d do. - - 4

Butter and Wines.

To Mrs. Frank Nelson, for the best specimen of butter, - - - - $4
To Mrs. R. D. Sims, 2d do. - - 3
To Mrs. G. W. Kinsolving, 3d do. - 2

Only one specimen of domestic wine exhibited, which, although good of its kind, (currant,) was not deemed worthy of a premium.

GLANDERS COMMUNICATED FROM A HORSE TO A MAN.

On Saturday week, an adjourned inquest was held at the Champion, Princes-street, Lisson Grove, on the body of John M'Lellan, whose death occurred under the following circumstances. The jury first proceeded to view the body of the unfortunate man, which presented a spectacle too horrible to describe, the face being entirely eaten away, and the whole body being one mass of sores from top to toe. From the depositions, it appeared that the deceased was the driver of a cab and horse, the property of Mr. W. Johnson, a cab owner, at the west end of the town. On the evening of Friday week, deceased came home, and complained of having a cold. He took some gruel, and went to bed. On the following day, large lumps or swellings began to make their appearance under the jaw and on the nose, which, as well as the eyes, emitted a great deal of running. The eyes gradually became worse, and

full of holes, and the nose and jaw broke out into dreadful sores. Medical aid was called in, but the gentleman who attended was unable to tell the nature of the disease. On Wednesday week deceased was conveyed in a cab to Sir Astley Cooper, who examined him, and pronounced it to be the glanders, caught from a horse. The deceased's medical attendant subsequently fell in with his opinion; but all remedies were found of no avail. The unfortunate man gradually became worse, and entirely insensible. In the space of two days his nose fell from his face, and his eyes became like a colander, both emitting a thick mucous running. He, however, about a quarter of an hour before his death, which took place on Thursday evening, recovered his senses, and stated that he had got his death by wiping the horse which was glandered with his pocket handkerchief, and then incautiously using the same to wipe his own nose. He expired in the most excrutiating agony. The jury returned a verdict "That the deceased died from glanders accidentally caught from a horse, of which he was the driver."—*London Paper.*

SINKING OF DRAINED SWAMP LAND.

[The following is an interesting account of the *sinking*, as it is called, but which is more properly the *rotting away* of vegetable soil, after its being dried and cultivated. The intelligent writer did not seem to be fully aware of the cause and manner of the disappearance of his soil. Before draining, for cultivation, any marsh or swamp, the undertaker should examine carefully the quality and chemical composition of the soil, so as to know whether it is of vegetable, putrescent, and therefore perishable matter, or sufficiently earthy to be permanent. Especially should this important point be settled before undertaking such great and expensive, and yet we hope most valuable and profitable public works, as the drainage of the immense body of swamp lands belonging to the Commonwealth of North Carolina, as ordered by the legislature.—ED. FARM. REG.

From the American Farmer.

Poplar Grove, St. Paul's,
South Carolina, May 20, 1823.

To the Editor—A correspondent in one of your late numbers, ask for information through the medium of your paper, relative to the reclamation of marsh land, which is covered with a heavy growth of trees—such as ash, maple and gum. He says, that an impression exists in his neighborhood, where large bodies of that land are to be met with, that woodland marsh, when reclaimed, will sink more than that which is free from wood. If any conclusive experiment has been made of this kind of marsh, I should be pleased to know the result; when convenient, if you will make the inquiries, to obtain information on the subject, I shall be obliged to you. As I have derived much instruction, and received a great deal of pleasure from the pesusal of your interesting paper, I will lay before you the result of an experiment, which I think will be conclusive to the mind of your correspondent, that I have made upon two hundred acres of marsh land, which was once as heavily wooded with cypress trees, as perhaps any swamp in Carolina; and of which I gave you some little account in Vol. 2, No. 44.

My plantation is so situated, that at the lower extremity, where I formerly embanked about two hundred acres, the tide-water is generally brackish, and oftentimes salt. It is so embodied with the old rice fields, that in order to supply it with the quantity of water necessary for the cultivation of rice, I dug a canal of twenty feet wide, and four miles long, entering the creek where the tide ceases to flow, and where from the drainings of a swamp many miles in extent, it is generally fresh; from whence at the flood tide my rice fields are supplied, and assisted in a drought by a long reservoir of water. The beautiful level appearance all alluvial soils exhibit to the eye, connected with its natural richness, induced me, about the years 1793 and 1794, to commence the undertaking, and which I have never had reason to repent. After many laborious and ineffectual attempts to get rid of the rushes, and turn up the land with ploughs and hoes, I became almost disheartened, being at a loss in what manner to proceed to effect pulverization, without which, the scheme must prove abortive. It occurred to me, that notwithstanding my ditches were dug three feet deep, there yet remained too much sobbiness in the land, to allow the successful operation of the plough. Satisfied of that fact, I dug up my river trunks, and replaced them at six inches above low water mark, sunk the ditches to the depth of five feet, and struck quarter acre drains about three feet deep. The effect was visible in the course of a few months; the rushes being deprived of that nourishment, they had been accustomed to receive from the sobby state of the land, died away. A fire was then applied on a windy day, which consumed them. The plough and hoes were again resumed, and I had the satisfaction of seeing the work progress. The land having now assumed a light husky appearance, very much resembling the peat morasses in Scotland, was thrown into large potato, or corn beds. In a short time a fire was again applied, which burnt them smooth to the ground, leaving ashes of a red color. It was repeated during the course of the winter, and in the spring, partial crops of corn, oats, barley and rye were planted upon a small scale, all of which failed. Perseverance, however, in tillage, and attention to the depth of my ditches, at length overcame all these discouraging results; the land, in due time, produced rice, cotton, corn, barley, rye and oats, all of which I have had since growing as a part of my crop, particularly barley, which was harvested about the 15th of May, and the land immediately planted in rice, making it produce two crops in one season.

The land, by constant cultivation, has sunk so much, that it is almost incredible to suppose the probability of a plough, drawn by oxen, could have gone over many parts of it. Large cypress stumps and roots have since risen up, and now show themselves 18 or 20 inches above the surface of the land, with the visible marks of the axe. The main bodies of the trees have been removed, many of them six feet in diameter; here and there

a large limb is found, which has been squared by my carpenters, and carried home, for the purposes of building—and here, Mr. Editor, arises a question for those who are fond of diving into these matters, who were the persons that applied the axe, and to what market were the trees carried? From the above statement, I think your correspondent will view it in the light of a conclusive experiment, that heavy wooded marsh land sinks more than any other kind of land without wood.

Before I conclude, I will adduce one more instance, still more conclusive, of the excessive sinking of this kind of land. In digging the canal, above mentioned, a piece of the land in question, consisting of about 20 acres, was enclosed by the embankment, wooded with the identical kind mentioned by your correspondent—ash, maple, gum—besides a few very large loblolly pine trees, a quantity of palmetto and cedar bushes, and the greatest part covered with rushes. This land, through which a creek runs, was so completely raised, that nothing but a very high spring tide, aided by an easterly wind, could at all affect, (the tide with me rises six feet)—knowing it to be of the very first quality, I ordered it to be cleaned. Since which, it has produced abundantly of every kind of grain, planted on our low country. It now ranks among my first rate fields, and often produces fifty and sixty bushels of rough rice to the acre. I remain, very respectfully,

CHAS. E. ROWAND.

From the Edinburgh Farmers' Magazine.

REVIEW OF THE COMPARATIVE STATEMENT OF THE EXPENSE OF OXEN AND HORSES FOR FARM-LABOR, GIVEN IN THE NORTHUMBERLAND SURVEY.

As the authors of the Northumberland Survey, reviewed in your fourth number, appear to have very much undervalued the expense of keep, both of oxen and horses, I have sent you an attempt at a new estimate of both, on what seem to me truer data.

Expense of an Ox for one year.

Summering on grass, being the customary payment for a cow .			£	3	10 0
¼ of an acre of tares during summer, at £5 . . .				1	5 0
Wintering on straw .	£	1 10 0			
½ an acre of good turnips, at £5 . . .		2 10 0			
		4 0 0			
If on hay, 200 days at 8d.		6 13 4			
Half of this, as the average expense . .		10 13 4	is	5	6 8
Interest, harness, shoeing, as per Survey . . .				1	5 0
		Total		11	6 8
Deduct supposed increased value of the ox . . .				1	6 8
Gives the annual expense of one work ox . .			£	10	0 0
Hence, the 1st year, with 8 oxen, will cost .	£80	0 0			
The 2d and 3d years, 6	120	0 0			
Expense of three years	£ 200	0 0			
Average for one year . .			£	66	13 4
To which must be added, the expense of a driver, which I cannot estimate, including wages and victuals, below				14	6 8
Gives the total annual charge of each ox plough . . .			£	81	0 0

Expense of a horse for one year.

Summering on grass, 165 days, at 6d.	£	4	2 6
Vetches or tares, as for the ox .		1	5 0
Straw for half the winter, at the same rate with the ox . .		0	15 0
Hay half the winter, or 100 days, at 8d.			6 8
Oats, 70 bushels, at 2s. 3d. .		7	17 6
Harness, shoeing, and annuity, as per Survey		3	5 0
Annual expense of one horse	£	20	1 8

Hence, the annual expense of a two-horse plough will be £41 3s. 4d., leaving a balance in favor of horses for farm labor, and against the use of oxen, of £39 16s. 8d. for each plough. The ploughman is not charged in either, being the same in both.

In the strongest soil, the improved *swing-plough* can never require more than three horses, and that only for once ploughing, in particular seasons and situations. Suppose three required for half the year, and with a driver, this would add £17 7s. 2d. to the expense of each horse plough in such stiff soils, still leaving a balance of £22 7s. 6d. against each ox team.

Extending this comparison, with the authors of the Survey, who suppose 5000 ploughs in Northumberland, and, allowing Great Britain and Ireland to contain forty times the extent of tillage land in Northumberland, the two-horse ploughs give a difference of nearly six millions sterling annually. Supposing half the ploughs to have three horses, the difference would be nearly five millions. In such years of scarcity, the difference would be more than double.

It must, however, be observed, that the above comparison is made with the improved swing-plough, and will by no means hold good with the extravagant horse-teams so prevalent in the South, which are more expensive even than ox-teams.

It would go a great way towards lessening the danger of future scarcities, to devise a means of introducing the swing plough universally into practice. Perhaps a tax, increasing annually, upon all ploughs drawn by more than two, or at most three horses, would answer the purpose. A similar tax on boats constructed of hewn timber, very speedily introduced the saw into Russia.

The *second* calculation respecting the value of produce, by using ox-labor, comes much nearer mine, than the direct estimate of expense. Had the authors allowed nearer the average price, the difference would not have been very material.

They calculate directly the loss on each ox-team . . .	£	8	3 0
Estimate of lots of produce by each is		17	13 0
My calculation with two-horse ploughs		39	16 8
Ditto with three horses . .		22	7 6

The average of the whole is . £24 10 7½
And, leaving out the first, as greatly too low, the average will be almost 30 0 0

Upon the whole, the loss to the farmer, in the first instance, cannot be under £25 annually for each ox-plough team.* And it may be worthy of remark, that the whole of this loss must ultimately fall upon the landlord and the community.

R. R. R. R.

From the American Farmer.

FISH AS MANURE. STATEMENT FOUNDED ON EXPERIMENT.

Sir—I promised you, when I had the pleasure of seeing you here last year, that I would give you the result of an experiment made by using herrings as a manure; and since I have fully tested the experiment, I now give you the result, with all its minutiæ. In May, 1822, I purchased 32,000 herrings, and placed them in drills four feet apart, on 4023 square yards of ground, which is 817 yards less than an acre—they were placed quite thick in the drills—and then covered with a plough, by throwing two furrows together. On the 24th May, I finished planting the ground in corn, by dropping the same on each side of the drill at about three feet apart; but found when the corn grew about three feet high, it was much too thick, and was compelled to plough out every other row. The corn was once ploughed with a small corn plough, and twice with the cultivator, which was all the cultivation I gave it—the corn yielded, when gathered, a fraction more than 30 bushels; and although last year the corn in this neighborhood suffered much from the long drought, it had upon this corn no apparent injurious effect. While the leaves of other corn in its immediate neighborhood were dead and dried up above the ear, this was perfectly fresh; and the dry weather appeared not at all to affect its verdure.

On the 10th of October, I again ploughed the ground, and on the same day, sowed the same with two bushels of wheat. In the spring, the wheat grew so luxuriantly, I found it necessary to cut an acre with a scythe. It again very soon covered the ground. The weather preceding harvest was very favorable to this wheat, being uncommonly dry: had it been wet, I believe not one bushel would have been gathered. Dry as the weather was, it was cut with much difficulty, it had fallen to the ground so much. It yielded, when carefully taken from the straw, twenty-nine bushels. You saw the ground yourself, and know how very poor it was—and I am persuaded, had the fish been placed with some regularity on the surface of the ground, in the place of drills at so great a distance apart, by which the ground would have been regularly manured, it would have produced several more bushels of wheat than it did. As it is, it yielded at the rate of 34¾ bushels to the acre. I now give you the cost and profit:

32,000 herrings, at 31 cents -	$9 92	
Hauling five loads of herrings at $1 25 - - -	6 25	
Ploughing in ditto - -	1 00	
Expense of planting and cultivating corn - - -	3 00	
		$20 17
Cr.		
By thirty bushels corn at 75 cents, which was the price last fall - -		22 50
Clear profit on the first crop - -		2 33
I say nothing of the fodder, leaving that to pay the expense of getting in corn.		
29 bushels of wheat at $1 25 - -		36 25
		$38 58
Expenses.		
Two bushels of wheat at $1 25 -	$2 50	
Cultivation - - -	2 50	
		$5 00
Clear profit, leaving the land rich - -		$33 58

I would here remark, that although I used 32,000 herrings, 20,000 to the acre is quite sufficient, and will make a more certain crop than a greater quantity. I have used this spring, cat-fish and perch for my potatoes, and find them as good again as the best stable manure; and you will find at Messrs. Bradford & Cooch's, in a few days, a barrel of potatoes made from the fish—also a few at the top of the barrel in paper, the seed of which you gave me last fall—they were, I think, sent you from the north—they grew well with me, and are the finest potatoes for the table I ever saw.

Yours, respectfully,
BENJAMIN F. MACKALL.

Wilna Mills, Cecil Co., Oct. 12, 1823.

From the American Farmer.

SHEEP HUSBANDRY OF R. R. MEADE, DEC'D.

Read at the last meeting of the Agricultural Society of the Valley, (1824) and by order of said Society communicated for publication in the American Farmer.

Gentlemen—If an apology were necessary in making a communication to farmers on the subject of their profession and prosperity, I might find it in the queries propounded by our secretary, and his invitation to a free exchange of information on agricultural topics; also in a sincere desire I profess for the improvement of our husbandry through agricultural associations. Under similar impressions I had been in the habit of sending to the American Farmer the result of my efforts to improve the breed of sheep, with a hope of exciting a more special attention to that part of our occupation, but the suggestion of a member that any remarks made on the subject might reach those useful pages through the medium of our society, determined me in the propriety of respectfully placing at your discretion the report of my last shearing, with a few observations thereon—perhaps in the infancy of our institution, and in the absence of learned or scientific communications, a plain practical relation of facts may be interesting, and enable you to turn them to some advantage. The subject in my humble opinion has not receiv-

* We humbly recommend the above observations, together with the comparative statements between horses and oxen, for the purpose of the draught, presented in the Northumberland Survey, to the consideration of those members of the Legislature, who supported the bill for taxing farm horses, solely because it would operate as a premium in favor of oxen.

ed its share of discussion in the agricultural journals of our country, especially as it bears a double relation to our wants and our comforts. It is from the same animal that we obtain the choicest and most wholesome supply of food for our tables, and the material for a great variety of clothing suited to a vast extent of climate. The improvement and increase of our wool and mutton must then be an object of great concern to both rich and poor; and if by a change in management we can obtain more wool and meat from one-half, or two-thirds of the animals kept, our soil must consequently improve under an additional covering of grass, and we be immediately benefited in the increased quantity of tallow, flesh, and wool. There is a beguiling propensity with most of us to crowd our lands with stock, preferring, as it would seem, numbers to quality, and forgetting the difficulties attending a dry climate and long winter. When in the habit of keeping double the number of my present stock of sheep on the same ground, I was compelled at particular seasons to go to extraordinary expense in their feeding to keep them in a thriving condition. Notwithstanding, the average weight of their fleeces fell from eight to between four and five pounds. Experience then teaches me to keep no more sheep than I can feed well with economy, and have those separated in warm weather, never increasing their expense, risk, or trouble, by having lambs sooner than the first or middle of March, when they may have green food. A rye lot proportioned to the number of breeding ewes need be the only additional expense in keeping, to common pasture and good wheat straw when the snow is on the ground. A slight portion of Indian meal (too little to be called food) should be given them once or twice a week throughout the year, mixed in their salt. With the aid of improvements through crosses and selection, I will venture to say our flocks will double their produce in a short time. With regard to the expense of an individual flock, I may almost say that mine cost me nothing last winter. The weather, to be sure, was uncommonly favorable. A rye lot of nine acres divided, was their chief food, which was grazed until the 10th of April, and left pretty bare. I have hired the thrashing of the rye, in order to ascertain the quantity in time for your information. Two hundred and twenty-three bushels have been measured up, and I have no doubt there was two or three bushels left on the ground per acre, not having horse-raked it, as was the rest of my stubble (nearly twenty-five bushels per acre.) I had like to have forgotten a considerable part of the production of this ground. Turnip seed was sowed the last of August, with the rye, at the rate of two pints per acre, and harrowed in. Very late in the fall the largest were carried off, and the sheep had ample provision in the balance, preferring turnips to rye. I had hoped at this time to have been enabled to make a comparison between the productiveness of the long wool, and the merino; and to have ascertained how much good wool they sheared to the pound of flesh, but the circumstance of my long woolled sheep being in their prime, and the merinoes on their decline (not having bred from them for four or five years but by the long wool cross) would make an unequal comparison, and I should be sorry to venture an opinion lessening the value of the one, or increasing the value of the other, without a confident experience of both. Take them as they are, a few of the best selected from each, prove in favor of the long wool, nearly two to one, with regard to the fleece; but we must give the merino the credit of imparting a large share of this value to the long wool, for it appears, as far as my observation has extended, that the first long wool cross on the merino has the heaviest as well as the finest fleece. If this be the fact, my determination to select the finest, closest woolled males to breed from, will have the desired effect of uniting as nearly as possible the quality and quantity; the same practice will, of course, apply to other breeders of a similar stock.

Several of the first shear long wool, produced at the rate of one pound to every ten and eleven pounds weight on the hoof. The merino, Arlington long wool, and Tunis sheep are the most noted and valuable breeds immediately amongst us, and according to the situation and views of the breeder, deserve the greatest attention, either to perfect them as a distinct stock, or by judicious intermixtures to produce such valuable varieties as their nature, controlled by our skill, is possibly susceptible of.

June 3d. Sheared 49 sheep—5 wethers, one only a two year old—2 rams, one and two years old—12 ewes first shear—30 ewes from two to five and six years—26 of which produced 36 lambs, and raised 30 of them.

Weight of wool from Mr. W. Barton's notes.

9 fleeces full blood merino or 7-8	-	58¾ *lbs.*
8 do. Arlington long wool cross	-	73¾
8 do.	-	55¾
8 do.	-	66¾
8 do.	-	56¾
8 do.	-	62¾
49		374½

A total average, of above 7 5-8—the average of the 40 long woolled fleeces 7 7-8 lbs.—9 merino fleeces 6½ lbs.

There were a few fleeces weighed in presence of some of the officers and members of the society.

A Ram 2 years old, wt.	188 lbs.	fleece	10 lbs.
Ewe 1 year old, wt.	128	-	13
Ewe same age, -	118	-	11¾
Ewe do. - -	130	-	11½
Ewe do. - -	122	-	11
Wether, first shear,	128	-	11
Wether do. - -	120	-	11
Wether 2 years old,	185	-	8

It is to be understood that the whole of the wool was unwashed, and freed only from the gross tags. Samples of the above fleeces are sent you, which will be found to measure when the fibre is extended from six to nine inches—but take the very heaviest fleece we exhibit, and compare it with the Vermont fleece of 18¾* washed wool.

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* This fleece proved to be of four years growth, as appears by a correspondence in relation to it between the editor of the American Farmer and the postmaster at Bennington, see American Farmer, volume 5th, page 213. The sheep is there stated to be a full blooded merino of the Livingston stock. It would be worth while, if practicable, to ascertain the increase of *each year*, where fleeces are thus left more than one year.—Ed. Am. Farm.

Does it not prove the necessity of our endeavoring to do so likewise? There is a practice prevailing with us, which, however congenial with the best social feelings, is nevertheless utterly at war with the prospect of reformation—I mean that of selecting the very finest of our lambs for our tables—a moderate forbearance, in the use of the second best for a time, or until our flocks are more uniform, would enable us to have them very fine, and still leave the best—the practice also of permitting the butchers to pick the fine fat ewes out of our flocks is extremely injurious, as in getting the best mutton they will also get many of the best breeders.* Therefore be particular in marking your breeders. To all such as will not find it convenient to introduce crosses into their flock, let me recommend the value and importance of using their best judgment in selecting not only from their own flocks, but as the celebrated Bakewell did in the commencement of his improvement, pick them up from the highway—perseverance will do for them what it has already done for him.

To the society I would now most respectfully and particularly appeal, as to a body of liberal and intelligent farmers, associating themselves not merely for individual benefit, whether in the expectation of rewards, honorary or otherwise, immediate; or relying on future advantages accruing from a mass of practical information which should naturally arise out of such an institution, but as having from principle and conviction taken on themselves (so far as the case will admit) the responsibility of a reform in the cultivation of the soil, and the improvement of our domestic animals, as essential to the more comfortable existence of a very large class of our farmers, whose situation, moderate settlements, and most industrious lives, preclude from advantages, to be derived only through the intervention of superior wealth and intelligence. I would take the liberty of suggesting, whether the most useful and economical way of diffusing information on the subject of husbandry (together with that respectability which would be added to our institution) would not be in acquiring a small, but well selected library, for the use of the society, and afford the presses of Winchester an opportunity of a weekly supply of agricultural matter for the benefit of their subscribers; is it not reasonable to suppose that a work of such apparent usefulness would have the effect of rewarding them through an increase of patronage for any trouble they might meet with in assisting the cause? The materials for the speedy amelioration of our live stock, are certainly to be found in the middle and eastern states, and are to be had on terms entirely within the capacity of this society, and such perhaps must be the course of our improvement, if at all—as their wealth has enabled them to import and improve both by breeding in and in, and by crosses on our home stock, some of the best stock in Europe.

Out of the numerous kinds of sheep in Great Britain, which they appear to have nicely discriminated and allotted to their various soils and situations, we have selected the Leicester or Dishley (alias celebrated Bakewell sheep) and South Down, which are to be had in admirable quality in Jersey and Delaware, and are by far the most valuable sheep for all those who do not intend raising wool on a large scale for the manufacturer—the latter of these breeds may be formed in our own country by a cross of any short close woolled ram on well modelled ewes. I know not whether they have the full blooded Teeswater to the Eastward, the heaviest breed of sheep in England; it would be well for us to possess so large a race—but I am of opinion we are mainly deficient only in the form of the animal, which enables them to carry much more flesh and fat with a greater economy of keep. I beg leave to refer you to the engravings of the Bakewell or Dishley, and South Down, as not a descriptive, or highly wrought, but a faithful picture of such sheep, if they maintain the same form now, as when viewed by me some years past in the state of New Jersey. The form of these sheep must strike the eye of every beholder, and will, I hope, make an impression of the great necessity of reform. 'Tis easy to raise sheep of great apparent size, a considerable body, on long legs* covered by loose long wool, may cut a conspicuous figure—but in real value take a flock throughout the short legged, long bodied, straight backed, &c. &c. carrying a close fleece of a fineness to suit the purposes of the breeder, the longer the better, for in that is to be shown the great skill of the shepherd, extending the fibre without injury to its other qualities. They are two to one in value.

March 4th, 1824. It had been my intention to have made this communication last summer, had not circumstances prevented—with some addition and amendment, which I am not able to do now—since that time we have learned, through the Farmer, that the Teeswater sheep are to be had to the eastward. Permit me to call your attention to the subject of cattle, as contained in the accompanying letter from the ex-secretary of the Philadelphia Society.

RICHARD K. MEADE.

From the Edinburgh Farmers' Magazine.

DIRECTIONS FOR MAKING COMPOST DUNGHILLS OF PEAT-MOSS, BY LORD MEADOWBANK.

[The following directions and observations, though relating to peat, a soil found rarely in Virginia, (if any where but in the Dismal Swamp,) would probably be valuable if applied to the more decomposed and already fertile vegetable soils, which our tide-marshes and alluvial swamps present.—ED. FAR. REG.]

Presuming that the directions for making compost dunghills of peat-turf, in a judicious manner, as ascertained in a pamphlet lately written by

* Mr. Barney, of Delaware, always selects his breeders *first*, and never permits the butcher or the purchaser of breeding stock, even to look at his *best* sheep with a view to the purchase of them. This, after all, is the way for the farmer to get the highest prices, because it gives him the best *stock* sheep.—ED. AM. FARM.

* Such was the character, in a considerable degree, of the wether weighing 185 lbs. and shearing 8 lbs. wool, mentioned at the close of the list. This sheep had height and length enough to have weighed with a proper form and close fleece 250, and have shorn at least fifty per cent. more.

Lord Meadowbank, will be of utility to many of your readers, I have sent you a transcript of a part of that pamphlet. I have only to add, that I have seen a compost dunghill, made according to his lordship's directions, which completely answered the purpose, by fermenting the peat-turf, and thereby reducing it into a situation proper to be applied as manure; which appears to me to be a far preferable method to that of reducing the peat-turf (or moss, as it is called in Scotland) to ashes.

I am, &c. A. S.

Let the peat-moss, of which compost is to be formed, be thrown out of the pit for some weeks or months, in order to lose its redundant moisture. By this means, it is rendered the lighter to carry, and less compact and weighty, when made up with fresh dung for fermentation; and, accordingly, less dung is required for the purpose, than if the preparation is made with peat taken recently from the pit. The peat taken from near the surface, or at a considerable depth, answers equally well.

Take the peat-moss to a dry spot, convenient for constructing a dunghill to serve the field to be manured. Lay the cart-loads of it in two rows, and of the dung, in a row betwixt them. The dung thus lies nearly on an area of the future compost dunghill, and the rows of peat should be near enough each other, that workmen, in making up the compost, may be able to throw them together by the spade. In making up, let the workmen begin at one end; and at the extremity of the row of dung, (which should not extend quite so far at that end as the rows of peats on each side of it do,) let them lay a bottom of peat, six inches deep and fifteen feet wide, if the grounds admit of it; then throw forward, and lay on, about ten inches of dung above the bottom of peat; then add from the side-rows about six inches of peat; then four or five of dung, and then six more of peat; then another thin layer of dung; and then cover it over with peat at the end where it was begun, at the two sides, and above. The compost should not be raised above four feet, or four feet and a half high; otherwise, it is apt to press too heavily on the under parts, and check the fermentation. When a beginning is thus made, the workmen will proceed working backwards, and adding to the column of compost, as they are furnished with the three rows of materials directed to be laid down for them. They must take care not to tread on the compost, or render it too compact; and, of consequence, in proportion as the peat is wet, it should be made up in lumps, and not much broken.

In mild weather, seven cart-loads of common farm-dung, tolerably fresh made, is sufficient for twenty-one cart-loads of peat-moss; but in cold weather, a larger proportion of dung is desirable. To every twenty-eight carts of the compost, when made up, it is of use to throw on, above it, a cart-load of ashes, either made from coal, peat, or wood; or, if these cannot be had, half the quantity of slacked lime may be used; the more finely powdered the better. But these additions are nowise essential to the general success of the compost.

The dung to be used should either have been recently made, or kept fresh by compression; as, by the treading of cattle or swine, or by carts passing over it. And if there is little or no litter in it, a smaller quantity will serve, provided any spongy vegetable matter is added at making up the compost, as fresh weeds, the rubbish of a stack-yard, potato-shaws, sawings of timber, &c. And as some sorts of dung, even when fresh, are much more advanced in decomposition than others, it is material to attend to this; for a much less proportion of such dung as is less advanced, will serve for the compost, provided care is taken to keep the mass sufficiently open, either by a mixture of the above-mentioned substances, or, if these are wanting, by adding the peat piece-meal; that is, first making it up in the usual proportion of three to one of dung; and then, after a time, adding an equal quantity, more or less, of moss. The dung of this character, of greatest quantity, is shamble dung, with which, under the above precautions, six times the quantity of peat, or more, may be prepared. The same holds as to pigeon dung, and other fowl dung; and, to a certain extent also, as to that which is collected from towns, and made by animals that feed on grains, refuse of distilleries, &c.

The compost, after it is made up, gets into a general heat, sooner or later, according to the weather, and the condition of the dung: in summer, in ten days or sooner; in winter, not perhaps for many weeks, if the cold is severe. It always, however, has been found to come on at last;* and, in summer, it sometimes rises so high as to be mischievous, by consuming the materials, (fire-fanging.) In that season, a stick should be kept in it in different parts, to pull out and feel now and then; for, if it approaches to blood-heat, it should either be watered, or turned over; and, on such an occasion, advantage may be taken to mix it with a little fresh moss.† The heat subsides, after a time, and with great variety, according to the weather, the dung, and the perfection of the making up of the compost; which then should be allowed to remain untouched, till within three weeks of using, when it should be turned over, upside down, and outside in, and all lumps broken: Then it comes into a second heat; but soon cools, and should be taken out for use. In this state, the whole, except bits of the old decayed wood, appears a black free mass, and spreads like garden mould. Use it, weight for weight, as farm-yard dung; and it will be found, in a course of cropping, fully to stand the comparison.

Let it be observed, that the object in making up the compost, is to form as large a hot-bed as the quantity of dung employed admits of, and then to surround it on all sides, so as to have the whole benefit of the heat and effluvia. Peat, nearly as dry as garden-mould in seed time, may be mixed with the dung, so as to double the volume and more of it. Workmen must begin with using layers; but, when accustomed to the just propor-

* In order to bring on the heat more expeditiously in a compost made up in frost, a narrow addition of dung and peat has, sometimes, after the frost had gone off, been laid along the sides of the compost, scraping down a little the coating of peat upon it.

† In June 1796, a compost was formed, only 2½ peat of 1 dung: it heated in July beyond the measure of a thermometer graduated to 110°. Part was allowed to stand, part turned with a half more moss. Three weeks after, (18th August,) the heat of the former had descended to 84°, while that of the latter had got up again to above 110°.

tions, if they are furnished with peat moderately dry, and dung not lost in litter, they throw it up together as a mixed mass; and they improve in the art, so as to make a less proportion of dung serve for the preparation.

The addition recommended, of ashes or lime to the compost, is thought to favor the general perfection of the preparation, and to hasten the second heat. The lime laid on above the dunghill, as directed, is rendered mild by the vapors that escape during the first heat.

Compost, made up before January, has hitherto been in good order for the spring crops; but this may not happen in a long frost. In summer, it is ready in eight or ten weeks; and if there is an anxiety to have it soon prepared, the addition of ashes, or of a little lime rubbish of old buildings, or of lime slacked with foul water, applied to the dung used in making up, will quicken the process considerably.

Lime has been mixed previously with the peat; but the compost prepared with that mixture, or with the simple peat, seemed to produce equally good crops. All the land, however, that it has been tried on, has been limed more or less within these twenty-five years.

The rich coarse earth, which is frequently found on the surface of peat, is too heavy to be admitted into this compost; but it makes an excellent top-dressing, if previously mixed and turned over with lime.

Peat, prepared with lime alone, has not been found to answer as a good manure. In one instance, viz. on a bit of fallow, sown with wheat, it was manifestly pernicious.

ON THE CONSTRUCTION OF ICE-HOUSES, AND STOWING AWAY OF ICE.

To the Editor of the American Farmer.

Sir—Having observed in a late number of the American Farmer, some remarks upon the convenience and utility of securing a plentiful supply of ice, for use through the summer season, I take the liberty to add a few observations upon the subject, which, if you think useful, you are at liberty to insert in your valuable journal.

As it would neither be convenient to myself, nor beneficial to the object we have in view, to enter upon an extended discussion of this subject, I shall at once proceed to remark, that the common manner pursued, by almost every one in putting up ice, is to throw it promiscuously into the house, and then employ laborers to break it into small pieces. In this manner of securing it, numberless interstices are formed by the angles of the pieces after they are broken, which being filled with air, operate of course through the season, to promote the decay of the ice, and greatly accelerate its dissolution.

The manner which I have pursued, and which I strongly recommend to the observance of your readers, is, to cut the ice as nearly into squares as can conveniently be done, and when conveyed to the house, lay these down carefully, in regular layers, taking care to break them as little as possible. As soon as the first layer or stratum is completed, fill up with fine ice all the crevices, which the angles in the pieces may have occasioned, then sweep the surface clean, from all small fragments of ice, so as to leave a smooth clear floor or surface, to commence your succeeding stratum or layer upon; and thus proceed, until the house shall have been completely filled. In this manner, I have found that one-third more ice can be stowed in a given space, than could be put into it by the ordinary mode of pounding; and as there will not be the smallest crevice throughout the whole mass, if the plan here recommended is properly executed, it is confidently asserted that the ice will last *double as long* as under the common mode of securing it.

Every ice-house should be provided with a drain to carry off the drippings throughout the warm season, unless the bottom be an open porous sandy soil; as nothing is so fatal to ice as moisture. This drain should be so constructed as not to admit air; else a constant current of warm atmosphere will be drawn to the bottom of the ice, which will rapidly destroy it. The house, which the writer of these remarks has erected, is of the most simple construction, and a similar one may be built by any farmer, for an expense not exceeding $30. It has been filled in the manner here recommended, and has not been without ice since it was first stocked, and at this time contains a considerable quantity, notwithstanding the most profuse use was made of it, by two families, during the whole of last summer.

The following plan is recommended, in the construction of ice-houses: Dig a pit on the north or north-west side of a bank or hill, 18 feet square, and about 14 feet deep on the upper side, to which depth, the pit may be raised all round, by the dirt being thrown to the lower side; build in this pit a house of white oak logs, so as to leave a clear space between the outsides of the house and the wall of the pit, of about two feet. If the bank is of hard clay, it will need no stay: if it be not of clay, or hard firm soil, it must be stayed by pieces of plank propped against it, from the outsides of the logs, so as to prevent its covering the space between the logs; and this bank should be filled all round with straw, and the insides of the logs boarded up, so as to present a smooth even surface; this will leave the inside of the house about 12 or 13 feet square, which will be sufficient for any family.

The drain from the bottom of the house, should be placed on the lowest side, to which a sufficient fall ought to be secured from all parts of the foundation. The drain should be formed by stone, so laid as to afford an opening for the water readily to pass off, and then covered up with earth, taking care to allow to it a sufficient fall; and then its termination be covered slightly with earth, so that no air can pass up, whilst the moisture may gradually soak through. Lay at the bottom of the house, sleepers, so as to raise the planks to be placed upon them, about one foot from the ground, and upon these planks lay your first strata of ice, as is here before directed.

After raising your house with logs, (as here recommended, to the height of about 14 feet,) build another house over it, with logs, to be placed upon the surface of the ground, at the outer edge of the pit; raise this house about three feet high, upon which place your roof, and from the inner logs which inclose the ice, to the outer ones, which support the roof, nail planks, and stow the whole

space under them with straw—you will thus have an ice-house surrounded on all sides with a thickness of about two feet of straw. When the ice is put away, cover the whole with a suitable thickness of straw, which should be removed once or twice in the course of the summer, as it becomes wet, and replace it with a fresh dry covering. By pursuing these means, you need never be without a plentiful supply of ice at all seasons.

P. E. T.

From the Edinburgh Farmers' Magazine.

AN ESSAY ON THE PROPER SIZE OF FARMS.

This will best appear from observing the *effects* of the different classes of farms as at present existing, and which may be arranged under the following heads:

I. Of farms altogether under *tillage.*

II. Of farms altogether in *pastures.*

III. Of farms *partly in tillage, and partly pasture.*

Head I.

Of farms altogether under *tillage*, yet including as much pasture as may serve the milch-cows for the family use alone.

These again may be subdivided under the following classes:

1*st*, Of small farms in the occupation of *mechanics.*

2*d*, Of small farms in the occupation of *husbandmen*, having no other profession.

3*d*, Of *two* or *more* farms contiguous, cultivated by one farmer.

4*th*, Of *several* farms *separated* from one another, but in one man's occupation. First, then,

Of small farms in the occupation of mechanics.

These are generally to be met with in the vicinity of towns or large villages; there are some examples of them also in the smaller villages scattered over the country, in which the wright, the smith, the webster, or the sutor, have their bit of land.

The husbandry of all these, without a single exception, is bad; the more inexcusable, when it happens to be in the immediate vicinity of a populous town, where, from market and manure, they ought to be in the best state: but there is an inherent vice in this system, which no situation can counterbalance. For agriculture, in such hands, can never be more than a secondary object, or rather a by-job altogether: But, unhappily, this is not all the mischief; for even their primary profession suffers in their unavoidable distraction of attention between the different occupations: And thus, from commencing their agricultural career, as bad husbandmen, they commonly dwindle down, in the end, to be sorry mechanics likewise.

It would, however, be wrong to prohibit this species of husbandry. Why should a man be hindered from giving vent to his folly in this line, as well as in any other. His time, to be sure, is very ill bestowed on such a speculation; but it would be worse *spent* in the *tavern*, on the *turf*, or in the *cock-pit;* and if there be any truth in the notion, that the *health* of such people is promoted by rural operations, it may compensate in some degree, to the state, what it thus loses by their wretched cultivation.

There are, indeed, some examples of farms on a larger scale, that are occupied by *townsmen*, in which the cultivation is by no means bad. Some people, however, are ill-natured enough to remark, that the original profession declines in proportion as the farming advances: but the consideration of this is foreign to the present question.

2. Of *small* farms in the hands of *husbandmen having no other profession.*

By a farm of this description, I mean one of a *single ploughgate* of land, containing from 30 to 50 acres.

In this situation, the farmer cannot afford to *lie idle*, as it is termed; he must be a laborer himself, and is commonly the hardest wrought laborer on his farm. He is indeed the only able-bodied man about his *town;* his servants consisting of a raw lad to assist him in the field-operations, and a boy to take care of the cows. In winter, he may have an old man, supernumerary, to assist him four or five months to thrash out his crop; but, at all seasons, he receives much assistance from the female part of the family. The women are ever kept in full employment. They *redd* the barn to the old man; they fork the dung, and spread it along with the lad; they muck the byre, and fother the nolt with the boy; they carry the seed-corn to the *gudeman;* and, in company with the *gudewife*, they weed the lint, and dress it; and besides spinning, and the daily operations of the *dairy*, and making of the *porridge* and *kale*, they have the occasional drudgery of the washings to perform too. Nothing, indeed, can exceed the industry of this part of the family, but the cheerfulness of their disposition, and their unaffected simplicity of manners.

With regard to the agriculture of this plodding class of farmers it depends very much on the practice they have been educated in. No improvement almost was ever known to originate with them. They have even a reluctancy to adopt any that may be suggested to them. This does not arise, however, from any perversity of disposition or failure of intellect; but it is the natural consequence of their confined situation, and scarcity of transactions. They cannot afford to mix with the world from curiosity: even their indispensable absence from home, on account of business, is peculiarly inconvenient and expensive, as it lays the full half of their home-operations at a stand, while the little business they have to transact abroad is not full employment for the time.

There are, however, many examples of good cultivation in this class, (in well established modes of good cultivation they are indeed excelled by none); but it will always be found, that the most intelligent of them or those who have had, from some specialty in their circumstances, an unusual intercourse at an early period with society; or who, living in the vicinity of a great town, have hence acquired, at little expense, a knowledge of mankind, and of the principles of improvement, which in a remote situation, in their limited sphere, they never could have attained.

Whenever our country is so completely cultivated, that there will not remain a single improvement that can be made, either by inclosing, draining, watering, &c., or in cattle, implements, or rotation, then may it be laid out into such small farms, and consigned into the hands of these little tenants, who will be able, perhaps, without any great

loss, to retain the soil in fertility. Such arrangement may be even necessary, from a regard to the morals of the people; as, from the dissipation which will naturally accompany such a state of prosperity, there would be no class of men so apt, from their circumstances, to retain the simplicity of manners and laborious industry of ancient times. Even at the present day, they may be placed in the vicinity of great towns, where the land is already, for the most part, in an improved state, as their habits of industry and temperance would, for some time, prove a barrier against the spread of the enervated licentiousness of city-depravity; though it might still be necessary, from time to time, to renew the race from more remote parts, in proportion as the present possessors become contaminated with the vices of a more luxurious life. This change of tenantry would be of advantage, were it mutual between the parties: for, if those who have been living for a series of years in the neighborhood of a great town, were removed to a more remote situation, their more intelligent ideas in their profession would operate to the more rapid melioration of the less improved lands on which they might choose to settle, while they would lose the habit of dissipation, from being less in the way of temptation to indulgence.

At present, the produce brought to market from small farms is always less in proportion, than from farms of a larger size: because a greater proportion of it is consumed at home, by the more proportionably numerous stock of unproductive cattle; an inherent evil in little farms, which no genius in the occupier can obviate: and, in general, there is even less produced on the ground, from the circumstances before stated, with regard to the abilities of the husbandman himself. With regard to the effect of small farms on population, that will best appear from the next subdivision.

3. Of two or more farms lying *contiguous*, occupied by one farmer; being the general means by which *great* farms have originally been formed.

Though this system of letting lands has ever been a grievous subject of lamentation with half-witted politicians, it has nevertheless, in practice, been found to be the most beneficial to the country, and still continues to add to the general prosperity.

When two or more farms are conjoined, the following effects arise: 1. The *expense of labor is reduced*, in so far as the peculiarities in the soil in one, are contrasted by those in another farm; so that when the land is not in a condition of being labored in one, it may with propriety be labored in another; as in the example of one of the farms being of a dry soil, and the other of a wet; and which is commonly a conducing reason for the conjunction. Even where the soil is all of the same nature, there arises an advantage in the laboring of a great farm, from the concentring of the strength of men and horses at any particular operation, by which it is got finished in proper case, with less risk of being spoiled, from the uncertainty of weather, &c. 2. The *expense of house-keeping* is reduced, in proportion as there are fewer families of farmers to maintain. 3. The farmer, having more business, is more abroad in the world; is conversant in a higher line of life; and thus, having more opportunities of information, he, in fact, becomes better informed; and as he has, 4. The *profits* of a *greater quantity* of ground in his hands, he is thence more able to introduce an improvement in practice or in stock, from another quarter, or better enabled to propose it himself, from his own observation and experience.

The real produce of the lands becomes thus augmented; and as there is less of it consumed at home, (there being fewer men and horses to maintain), a still greater proportion goes to market.

The *population* on the land is also augmented; for although it be true, that the common operations of the farm are conducted by fewer hands, yet there is always some extra work going forward in the various operations of improvement; such as, in hedging, ditching, levelling, draining, building, &c. which the little farmer never would have thought of, or never have performed. The great farmer also excels the little tenant in a circumstance, which, more than any thing else conduces to the population of the country; which is, that the *greater part of his servants are married, and have families of their own:* and this he chooses, not from any affectation of patriotism, but from a principle of more effective influence—a regard to his own interest; as he finds, that a numerous household of unmarried servants are very unmanageable, and that he is better served with sober married hinds, who board in their own houses, at less expense, and more to their satisfaction, as well as his own.

The following state, in regard to this point, of a farm in the vicinity of Edinburgh, consisting of about 280 Scottish acres, and which, prior to 1736, was in three farms of two ploughgates each, and which has since been united into one, shows this in a more explicit manner.

1735.		1793.	
Families of farmers	3	Family of the farmer	1
Ditto of cottagers	6	Families of cottagers	14
Total families	9	Total families	15
Horses	33	Horses	16
At this period, the increase from the married servants, was not sufficient to keep up the number of unmarried servants, who, of course, were obtained partly from the neighboring villages; being sons of weavers, tailors, &c.		At the present period, the increase from the married servants does much more than supply the population necessary. Their sons and daughters are therefore sent to supply the neighboring towns, or to *the smaller farms in the neighborhood which cannot supply themselves!* There are also at this time, four young men from this farm at sea.	
Rent about 230l.		Rent 636l.	

As to the question, *How large ought a farm to be?* I can perceive no bounds, in point of propriety, except those which nature has set to the genius of the farmer, and providence to his fortune; for the larger that the farm be, if the tenant has capital, and abilities answerable, the better it will be, in every respect, to the community; as not only more produce is brought to market, but actually more is produced, from the superior advantages the great farmer enjoys, of being more able

to make improvements, because more wealthy; but also better inclined to do so, from being more intelligent. We even see, that the population of a country thus occupied, is augmented, from the circumstance of his interest being concerned, in giving the preference to married servants, instead of lads and boys, and superannuated men, with which the small farms are peopled. That he does not employ the whole progeny of these hinds, is a favorable circumstance to the public, as they serve as an excellent nursery for the supply of the mechanical branches, which not only cannot be recruited from a country laid out in small farms, but are themselves drained of their youth, to keep up the population of that unproductive system.*

Instead, therefore, of inquiring what ought to be the size of a farm, an assize ought to be held on the judgment of the farmer, and the capital he is able to command; for although it may be remarked, that the powers of the mind, even in the same person, expand and contract, according to the situation in which he may for some time be placed, yet there can be no doubt, also, that there are people whose genius far surpasses the general run, in whatever circumstances they may be placed. Thus, while it would require a man of considerable abilities to manage, in the best manner, a farm of 300 acres in tillage, I should suppose, that were the vast abilities of a *Fox*, or of a *Pitt*, to be concentred on agriculture, with an inclination to the profession, they could, with equal ease, manage a farm of ten times the extent: at least, those who undertake such a charge, and do justice to the subject, might be considered, in agriculture, as those two great characters are in politics, among the most enlightened of their compatriots.

A farm in the vicinity of a great town, requires more abilities to manage, in proportion to its extent, than a farm in a more remote situation; because the branches of operation are more minutely divided, and the sources, from which the revenue is obtained, flow in more various channels; while the general economy of the whole is regulated by more uncertain and variable principles.

4. Of *several* farms in the possession of *one* farmer, lying at *a distance* from one another.

In this system, the advantages are not altogether so great as when the farms are contiguous: For, 1*st*, The contrast in the soil gives no advantage in the labor; nor can the strength of the whole be concentred on one object: of course, a greater expense in labor is incurred. 2*d*, As the master cannot oversee the whole personally, he must delegate his authority in part to an overseer, which seldom turns out so effective. But, in other respects, the advantages are nearly equal; and in population it is superior; for more people are required to do the same work. The profit, of course, will be diminished; but as the farmer will be more in the practice of traversing the country, he will naturally become more intelligent, and thence carry on his plans more judiciously.

* It is curious to observe the cant of declamation (for depopulating the country) which has, for these last forty years, been kept up against the uniting of the small farms, which has taken place chiefly in that period, which has not only been an æra of great agricultural improvement, but the population, from actual investigation, has increased, in Scotland, near 300,000 souls, or about one-fifth of the whole.

Head II.

Of farms altogether in PASTURE, *including a small proportion of tillage, for raising corn and potatoes for the residenters.*

These may also be considered under the same subdivisions as in the former head.

1*st*, With respect to mechanics interfering with this system, there is hardly an instance, though it would be much more for their advantage, if they converted their pitiful possessions to the maintenance of a milch cow, or the rearing of a young beast, than, in their present wretched system of tillage, oppressing themselves, and disgracing the country. But, for this purpose, it would be necessary that their patches were inclosed: but that would be by far too great an exertion for their genius; and so I shall leave them to their own mismanagement.

2*d*, Of *small* pasture farms in the occupation of tenants having *no other occupation*.

There cannot well be a very small farm of this description, as the attention required would not be sufficient employment, neither would the profit to be derived be a sufficient recompense for constant attention. They must necessarily, therefore, be of greater extent than the small arable farm, where there is always abundance of employment to the little tenant; and although there may be little recompense to him as a *master*, yet he is generally understood to be sufficiently remunerated for the labor which, as a *servant*, he bestows upon it.

The same circumstance which promotes the prosperity of a corn farmer on an arable farm, and the consequent prosperity of the country, will, I am persuaded, operate in the same manner upon a cattle-farmer in a pasture farm, viz. that the larger that the concern be, if the tenant has abilities answerable, the more enterprising will he become, and the country will the more speedily be improved in the breed of cattle, and melioration of pasture lands.

3*d*, Of *two or more* farms lying *contiguous*, in the occupation of one tenant.

That the tenant in this situation will be more wealthy and more intelligent, and hence, being more enterprising, will be more beneficial to the country, has already, in the foregoing article, been noticed; in addition to which, the following remarks occur.

A man will be able to manage a pasture farm of greater value and greater stock, on a rich soil, than on a poorer one, which must be more extensive to yield the same produce, and will therefore require more exertion to oversee. The quantity of land and quantity of stock that a farmer may have abilities to manage in a pasture farm, may be vastly greater, than in a farm under tillage; as there are fewer servants to oversee, and as the process of breeding and feeding cattle is much less complex than that of raising corn.

The effect on population, of uniting two or more pasture farms into one, will be much the same, as formerly stated, with regard to farms in tillage; for, although the tenant may be enabled to keep fewer herds, yet he will naturally choose that these should be married men, boarding in their own families: even were this to produce no increase of population, it ought to be held as beneficial to

the country; for the great farmers' herds have a better chance of getting full employment, than in a small farm tending a small flock,

"The herd diminutive, of many hues;" THOMSON.

where they are little better than half idle: for a population of idle people ought to be exploded; as not only are the faculties of these people themselves locked up for want of exertion, but the money which their maintenance requires, is thus diverted from the channels of enterprise and improvement into which it might otherwise have flowed.

4*th*, Of *several* pasture farms, at a *distance* from each other, in one tenant's occupation.

The effects in this case are almost the same as if the farms lay contiguous, provided each separate farm has all the varieties of pasture, and proper shelter for the cattle; but if this is not the case, it were better for the farmer (and for the public) that they lay conterminous to one another, as they thereby could afford accommodation, to the mutual advantage of the whole. So far, also, as loss may arise from the master not being able to superintend the whole, so far will there be a disadvantage in having distant farms in pasture, as well as distant farms in tillage; but, on the other hand, as was before observed, the farmer himself will become more intelligent, in proportion as he has to traverse a greater range of country, from which he will the more readily introduce or make improvements in the breed or management of his flock.

Head III.

Of arable and pasture united.

Whatever has been said respecting the *size* of farms, in the two former heads, is equally applicable to this; the larger that the farms are, the more intelligent and enterprising will the farmer himself be; and hence, from his more spirited and judicious exertions, the community at large will derive a greater advantage.

This mode, or system of farming, is the most judicious of the whole, as it promotes the interest of all parties concerned, the proprietor, the tenant, and the public at large, more than either of the two modes separately. It promotes the interest of the proprietor, by affording him a greater rent: it promotes the interest of the tenant; because he will be able to manage a greater extent of land, than in a farm wholly in tillage; and he will have more intercourse with the world, than in a farm wholly in pasture; and hence, performing more business, and being more enlightened, he will become more wealthy. Finally, it promotes the interest of the public; because a greater proportion of the produce will be brought to market, and even a greater crop produced. This arises from two causes: 1*st*, there will be fewer unproductive cattle to eat up the produce at home: 2*d*, The lands being alternately in tillage and in grass, they will be kept in better condition; and the crops of corn, and of hay or pasture, will be more luxuriant, and of a better quality.

With respect to *population*, this system is unfavorable in one case, and favorable in another. It is unfavorable in the case of converting a farm, that had been wholly in tillage, into part tillage, and part pasture; for pasture land always requires fewer people to manage it, than lands in tillage but for the same reason, it is favorable to, or increasive of population, when pasture lands are converted to the production of grain. In a great proportion of the best lands of England, it would be highly for the advantage of all parties, that this system were adopted, instead of the grazing system, which prevails without variation. In Scotland, however, the case is different; there, the greater part of the arable lands, which formerly were kept wholly under the plough, have been most judiciously improved, from the introduction of this alternate system, and which has, to a certain extent, diminished the number of people employed in agriculture, greatly to the mortification of the gloomy-minded declaimers against the present times, who, in the blindness of their rage, denounce the uniting of small farms as the cause of this mistaken national calamity. But, even were this notion to be well founded, (and it would not be difficult to show that it is not,) yet surely it is not solely the *numbers* of people employed in any profession, that ought to render them respectable in the state; regard must also be had to the *ingenuity* with which they are actuated, and the *industry* with which they carry on their operations. People, not judiciously employed, are little better to the state than if they were not employed at all.

H.

For the Farmers' Register.

ROUGH FIELD NOTES.

No. I.

Chesapeake and Ohio Canal.

This canal is one of the most interesting, and, in point of construction, one of the greatest works in our country. It was commenced ten years ago; and packet boats can now ascend to Williamsport, rather more than 100 miles above Washington. It leaves the head of tide-water at Georgetown, and will terminate somewhere on the Ohio near Pittsburg. The whole length, when completed, will not be less than 340 miles. This route may be divided into three sections: first, the eastern, from Georgetown to near Cumberland, 187 miles; second, the section on which is the summit level, from Cumberland to the north of Casselman's River, 71 miles; and third, from the last named place to the Ohio, 85 miles.

The rise on the first division is 635 feet; the whole lockage on the second, 1961 feet; and the fall on the third, 619 feet; making the lockage of the whole canal 3215 feet. On the second division, there will be a tunnel, of rather more than 4 miles long, under a ridge of the Alleghany, 860 feet in elevation. What a stupendous undertaking! If ever completed, to see it will be worth a trip across the Atlantic.

From Georgetown the canal rises, by a rapid succession of 5 locks, 35 feet. At Harper's Ferry it attains an elevation of 255 feet above tide, by means of 32 locks. The locks are all built of stone, hewn on the face, 100 feet long and 15 feet wide in the clear, and are from 6 to 8 feet lift. The canal itself is 60 feet wide at water-surface and 6 feet deep. For a few miles above Georgetown, the dimensions are even greater. The tow-path is 10 feet wide at top. The embankments of the part now in use have become solid and firm. The canal slope of the embankments is covered,

for the greater part of the way, with broken stone, measuring not more than an inch or two cube, to prevent abrasion. The stone is found to preserve the banks well, and will be used for this purpose throughout.

After leaving Georgetown, until the principal falls are passed, the banks on either side of the Potomac crowd on the river, and the canal clings along the northern bank with frequently perpendicular bluffs of rock, 50 feet high one side, and stone walling on the other, to protect it from the river. The valley of the river, however, soon widens. The receding hills give more room for the canal, and a better location is obtained on a gentle slope, free at once from the heavy cutting or walling. The hills frequently again approach the river, and again there is very heavy work. Such are the general features of the location from Georgetown to the Point of Rocks, at which place the Potomac breaks through the first range of the Blue Ridge, under the appellation of the Catoctin Mountains. From this point to Harper's Ferry, the canal and Baltimore and Ohio railroad run side by side, frequently along the side of precipitous hills, with rocks hanging a hundred feet above them.

At several places below the Point of Rocks, the canal cuts through the beautiful Potomac breccia, the material of the columns in the hall of congress at Washington: in fact, those columns were taken from this very place. There was a long suit between the canal and railroad companies, with regard to the right of way between the Point of Rocks and Harper's Ferry. The canal company, being the first chartered, and believing that the railroad would seriously injure their interests, strenuously opposed the passage of the railroad. The suit was decided against the railroad company; but the matter was afterwards compromised, and, in consideration of a certain sum of money, the right of way was granted to the railway.

The Monocacy and Catoctin aqueducts, across streams of the same names, are the principal structures below Harper's Ferry. The former consists of 7 arches, each about 55 feet span, the latter of 3 arches. They are built entirely of stone. A part of the Catoctin aqueduct fell down about June last, and they are now engaged in repairing it.

Harper's Ferry is situated in the fork of the Potomac and the Shenandoah. You have heard much of the scenery in its vicinity. My anticipations were very great, but they were not disappointed. I reached it a little after dark, and saw it both by day and moon-light. On approaching it from the Point of Rocks, the scenery combines both beauty and sublimity. The Blue Ridge is soon passed, and the traveller is enclosed by mountains—the river falling and tumbling over rocks—the quiet canal calmly winding its way in graceful curves—the long train of engine and coaches hurrying rapidly past—the high and rugged mountains on either side at times presenting to the eye nothing but naked rocks, at others covered with all the tints of autumnal foliage, and the setting sun with its reflected light streaming along the bosom of the water, all combine to furnish a scene truly enchanting. A little farther, and the course of the river becomes more and more intricate; its egress can no longer be traced, nor can the eye find where it enters the barrier of mountains. On reaching Harper's Ferry, the effect of the scenery is still increased: up the Potomac or down the Potomac, or up the Shenandoah, all is beautiful.

Alexandria Canal and Aqueduct.

The proper termination of the Chesapeake and Ohio canal is undoubtedly at Georgetown; but both Washington and Alexandria have determined to extend it through their respective bounds. To this end, Washington has expended a sum of $225,000 in converting what was once an ugly and filthy creek, into a broad canal, which extends through the lower part of the ground of the corporation, to the east branch of the Potomac. The Alexandria canal is on the south side of the Potomac, and is to be united to the Chesapeake and Ohio canal, by means of an aqueduct, now in the course of construction, at Georgetown. Think of a navigable canal being carried across the tide-water of the mighty Potomac! The aqueduct will consist of nine spans of about ninety feet each. It was commenced four years ago, and has heretofore proceeded slowly. They seem now, however, to be pushing the work with more energy; and it will not be long before the canal boats will be gliding across, at an elevation of 35 feet above the surface of the water. One abutment and 3 piers are now finished; 2 other piers are above high-water, and 3 have yet to be founded. The masonry of the abutments and piers does great credit both to the builders and superintendents, and the coffer-dams and fixtures, (accounts of which have been published in some of the European journals,) show great professional knowledge on the part of their engineers. The piers are founded on solid rock, as much as 35 or 40 feet below the surface of the water. A steam engine is used to pump the water from the coffer-dams.

As much, however, as I admire the execution of the aqueduct, so far as it is finished, and, indeed, as noble and magnificent as is the undertaking, I still more wonder at the consummate folly which throws away hundreds of thousands in constructing a canal by the side of such a river as the Potomac. A striking comment on the wisdom with which this work was conceived, is the fact that a steamboat plies almost hourly between Georgetown and Alexandria, and the fact, that I saw at the wharf of Georgetown, at the very head of this canal, a full-rigged ship of not less than 350 or 400 tons. It is attributable to the same petty jealousy, no doubt, which is so often found throughout our widely extended country, causing immense sums to be sometimes expended in vain, and, at others, preventing the expenditure of a cent, where thousands might be expended with profit.

Baltimore and Ohio Railroad.

This work was commenced in 1828, and is interesting in as much as it was one of the first railroads in this country—and because its company has done more than any other to advance and improve the railway system. Almost every different kind of superstructure has been tried, and experiments made without regard to cost, in order to attain that which was really best.

The railroad leaves the head of Pratt street, in Baltimore, and passes across the country for 9 miles to the Patapsco. In this distance there is much heavy work—excavations and embankments as much as from 40 to 70 feet. In this part of the route is the Carrolton viaduct, well worthy of notice. It is built of hewn granite, consists of two arches, one of 80 feet span across Gwynn's Falls, and a smaller one of 20 feet span for a roadway. The whole length is 312 feet—from surface of water to top of the parapet is 52 feet, and the width between the parapets is 26 feet. The cost of this viaduct was $53,000.

After striking the Patapsco, the railway follows the valley of that river to its head, about 40 miles from Baltimore. For this distance it follows closely the windings of the river, and for nearly the whole way constitutes a shelf along a precipitous hillside. It crosses the Patapsco once, about 15 miles from town, by a stone bridge, 375 feet long, and consisting of 4 arches, two of 54 feet span, and two 21 feet. This bridge is a handsome structure of unhewn granite of the best quality, an abundance of which is found in the vicinity. A small quantity of granite was carried from this place to Washington, for the new Treasury buildings; but much the larger portion of the granite for that immense pile came from James River. These 40 miles are a continued series of curves, and curves too of small radius; some of the curves having a radius of only 395 feet. The evil of bold curvature in a railroad was not so well understood when this road was built. The company is now actively engaged in altering their location in many places, and grading a new way in order to avoid some of their worst curves. In one place they will have to cross and recross the Patapsco, making two expensive bridges.

From the head of the Patapsco to the head of Bush creek, a tributary of the Monocacy, a distance of four miles is occupied in crossing Parr's Ridge. This is the dividing ridge between the waters of the Patapsco and those of the Potomac, and is 813 feet above mid-tide, at Baltimore. It is ascended by two inclined planes, the first 2150 feet long and 80 feet high, the second 3000 feet long and 100 feet high. On the top there is a level 600 feet in length, intended for the location of the machinery for working the planes. On the opposite side, the road in like manner descends from this ridge by two inclined planes, the first being 3200 feet long and 160 feet high, the second 1900 feet long and 81 feet high. These planes are at present worked by horse-power, and are an annual expense of $25,000 to the company. The day I crossed this ridge, each coach, (and there were 3 coaches of the largest class,) was drawn by 6 white horses. These planes might have been avoided by grades of 80 feet to the mile, and I am glad to see that the company is now engaged in making that alteration. The planes are all straight.

From the western foot of Parr's ridge, the road follows down the valley of Bush Creek, to near its junction with the Monocacy. It then crosses this stream, and after running down its valley a mile or two, strikes across the country to the Point of Rocks, on the Potomac. This portion of the road has less bold curvature than any other. though there is no part of it where the curves are not very objectionable. The Monocacy is crossed by a bridge 350 feet long, of 3 spans 110 feet each. The piers and abutments are of stone, but the superstructure of wood. After crossing the Monocacy, there is a branch to Fredericktown, 3 miles long. From the Point of Rocks to Harper's Ferry, as I mentioned before, the railroad runs up the valley of the Potomac, along side of the canal. At Harper's Ferry it connects by a bridge with the Winchester road, penetrating 32 miles up the finest valley of Virginia. This bridge consists of stone piers and wooden superstructure, on the plan of the celebrated Schaffhausen bridge. It consists of 6 spans of 140 feet each. It is now much out of order and considered unsafe for locomotives. The Winchester road leaves Harper's Ferry on trestle work, which is planked over, and forms by moonlight one of the most beautiful promenades I ever saw, running immediately up the middle of the Shenandoah valley, with high mountains towering on either hand.

The valley of the Patapsco furnishes scenery singularly wild and interesting, and the ravine of Bush Creek not much less so, with which the rich and highly cultivated country, through which the road passes from the Monocacy to the Potomac, furnishes a striking and beautiful contrast. So that there are few roads on which you can travel the same distance with such delightful scenery. From Baltimore to Harper's Ferry, the road is 81 miles long, and has cost about $28,000 per mile. The grades on this road, with a few exceptions, are less than 30 feet to the mile.

From Baltimore for 58 miles there are two tracks laid; for the remaining distance, only one has been yet put down. One of the tracks for 30 miles consists of iron plates $2\frac{1}{4}$ by $\frac{5}{8}$ inches on stone rails; all the rest consists of wooden sills, bedded every four feet on broken stone. Into these sills is keyed a rail 6 inches square, and on the rail a plate $2\frac{1}{4}$ by $\frac{5}{8}$ inches. The stone and iron track is used as little as possible; much of the iron has been taken up, and cross ties of wood put on the stone. In a few days they will begin to put new superstructure throughout, on a plan which will be both strong and lasting. They will make their road-bed in the first place of broken stone; on this will be bedded longitudinal string-pieces, on which will be put cross-ties every 3 feet. These ties will support a T rail, weighing 41 to 45 lbs. per yard. It is a source of no small degree of pleasure and admiration, to see a company that has expended such large amounts of money uselessly, and worse than uselessly, still pushing boldly on, gathering experience from its errors, and prosecuting its noble undertaking with an enterprise and energy that must ensure success. The company manufactures its own engines and cars, and has very extensive workshops in Baltimore. The company has my best wishes; it has done much for the cause of internal improvement, and has uniformly exhibited a degree of liberality and enterprise not often met with.

From the Practical Farmer.

CLEANING NEAT CATTLE.

The following we translated, and we would invite the attention of farmers to the subject. Our German correspondent is the right kind of a man.

He gives his notions well confirmed by experience. —*Editor.*

Xenia, Ohio, June 14th, 1838.

MR. EDITOR—Allow me, through the "Farmer," to say a word to my fellow farmers on, what seems to me, an important subject. In this country, you will seldom find a curry-comb and hand brush in the cow-stable; but I consider them indispensable in the cow-stable, as in the horse-stable. Why farmers do not curry and brush their cows, I know not, unless it be that they think cleanliness is not so necessary to the cow as to the horse.

But if we will, for a moment, consider the evils arising from this neglect, the importance of keeping cows clean must strike every reflecting mind. It is well known that no animal, neither horse nor cow, can be healthy, unless *the insensible perspiration goes on regularly*, and this can never be going on if cows are kept in a dirty stable, and no pains taken to rub off carefully the dirt or matter which obstructs the vessels or pores of the skin.

Wherever cows are regularly curried and rubbed they are invariably stronger and in a healthier condition; not liable to *cutaneous* and other diseases; and from experience I know they yield more milk, and that too of a better quality—a cleaner milk, richer cream, and sweeter butter, necessarily follow.

I make it a practice to curry my cows once a day very carefully—I never suffer any dung to stick to their coats—it looks bad, and injures the cows. This useful animal does not deserve such *dirty treatment*. Give them litter sufficient, and remove the dung regularly, and this part is accomplished.

Many of our farmers seem to think that in order to have healthy and good cows, you need only feed them with a sufficiency of food; however, I am fully convinced from experience, that cows may be well supplied with food, still they will not be as profitable as they would be if kept perfectly clean, and free from all kind of dirt and matter obstructing perspiration, as above stated; besides this, if cows are kept perfectly clean, they will thrive upon a less quantity of food.

Cows are often subject to have swollen teats and udders, as well as other excrescences. These may be prevented if the parts be occasionally washed with warm water. The udder and teats should be carefully washed immediately before the cow is milked. It has been well said by Loudon: "Go to the cow stall—take with you cold water and a sponge, and wash each cow's udder clean before milking; dowse the udder with cold water, winter and summer, as it braces, and repels heat."

DAVID HEYMACKER.

KENTUCKY CATTLE.

The following are prices obtained for a part of a stock of fine blooded cattle, belonging to the estate of the late General James Garrard, as we find it in the Paris (Kentucky) Citizen. The list embraces all the thorough-bred cattle offered for sale.

Exception, sold to Brutus J. Clay & Co.	$1830
Eclipse, a calf, George M. Bedford - -	688
Cherry, a cow, to Gen. John Pratt - -	1125
Matilda, to Brutus J. Clay & Co. - -	920
Fanny Kemble, a calf, to Kemus Payne	880
Maria, a cow, to Wm. Gray - - -	551
Melvira, and calf, to same - - -	1005
Marchioness, yearling heifer, W. C. Goodloe	407
Moss Rose, to W. G. Clay - - -	375
Tulip, old, to Thomas Y. Brent - -	130
Beauty, to John and Joseph Collier -	476
	$8187

Below is a list of some of the fine mixed bloods:

Lady Morgan, yearling heifer, sold to W. Scott, for - - - - -	$550
Snow drop, a calf, to N. P. Rogers -	325
Lucilla, yearling, to James Batterton -	340
Julia Jackson, to Enoch Kirby - -	195
Rosetta, a calf, to same - - - -	155
Lily, to John Collier - - - -	190
Josephina, to Moses Ryan - - -	205
Red Beauty, to same - - - -	375
White Lily, to John Desha - - -	105
Young Nell, to John Graves - -	140
	$2580
Amounting in all to -	$10,967

From the Silk Grower.

SILK-CULTURE.

Having fed a small number of silk-worms the past season, and having, as I suppose, succeeded well, I send you a brief account of my fixtures, feeding, &c. If you think my experience will in the least degree aid the good cause in which we are in common engaged, you are at liberty to publish it. My cocoonery in 36 feet by 18, two stories high, lathed and plastered, with a chimney in each end, and a cellar under the whole. The building is substantial and well finished. It has 28 windows and 5 doors, blinds and venitian shutters. The building was intended to be converted into a dwelling in the event of its not being used as a cocoonery. Two rows of shelves, the whole length of the building, were put up, each shelf one foot above the other, so that I had large aisles between the rows of shelves and around them, affording ample room for feeding the worms and changing the hurdles. My hurdles are three by four feet, made with cotton twine, not knit, but crossed as a bed-cord. I supposed I had accommodations for feeding 2 or 300,000 worms hatched in succession. I accordingly procured two ounces mammoth white eggs, from Mr. Stone, of Burlington, which were understood to come from Germantown Pa., and several ounces of sulphur colored, from Mr. Comstock, of Hartford. These were all put in glass jars, and placed in the ice-house about the 1st of April. The 15th of June, the mammoth white were taken out and exposed for hatching, and in a few days, about 5250 of them hatched, which was all I obtained from the two ounces. I then exposed those I obtained from Hartford, not one of which hatched. Disappointed in my eggs, I called on Mr. A. M. Jerome, of Princeton, who supplied me with a paper of eggs which were in the process of hatching. These I brought home on the 26th of June, and about 25,000 of them hatched. I had then altogether about 30,250 worms. I placed them all on the shelves in the second story; about 12,000 on one side of the room, and the balance on the

other side. I fed the whole on the multicaulis, grown from roots and cuttings planted this spring. During the whole time of feeding, the temperature ranged very high, being several days as high as 93 degrees Fahrenheit, and seldom less than 72 degrees.

When I commenced, all the knowledge I had on the whole subject was "book knowledge." I had never seen a cocoonery, and never but once had seen worms feeding. My colored man, who had never seen worms, gathered the leaves and fed the worms until within about two weeks of winding, when I employed an aged man to assist him. Having some leisure, I spent considerable time in the cocoonery, determined to watch the feeding with care. A premium of $100 having been offered by the Monmouth Silk Manufacturing Company, to the person who would raise the greatest number of pounds of cocoons from the sixteenth of an acre, I measured the above quantity of land, and planted it with roots set upright, the rows eighteen inches apart, and the trees eight inches apart in the rows. The 12,000 worms above alluded to, I fed on the premium trees. The drought continuing so severe, and fearing the leaves on the premium trees would fail, on the 19th of July I took off about 5000, for which I borrowed leaves to carry them through. From this time it required 143 pounds of leaves. In about twenty-six days the mammoth white began to rise, and in about 31 days all, or nearly all, had risen. On the 28th day a few of the sulphur began to wind, and by the 35th day, all had wound. As a general rule we fed four times a day, never at night. After the second week we changed the hurdles every two or three days; the room was well ventilated, and always sweet and clean. Although good attention was given to all the worms, yet a little more attention was given by myself to the premium worms. They were fed just as often as they consumed the leaves previously given, and the difference in the size of the cocoons was obvious, the premium cocoons being very perceptibly the largest and most firm. The whole number of pounds of cocoons from the worms fed as above, was 86 lbs. 9 oz.; the whole number of pounds fed on the premium trees was 38, or if an allowance is made for borrowed leaves, allowing 21 pounds of leaves to a pound of cocoons, the number fed on premium trees would be 31 pounds, 14 oz. Of the mammoth white it required 350 cocoons to make a pound; of the premium sulphur cocoons 290 to 300; 192 of the largest, after the floss was taken off, made a pound; of the sulphur colored cocoons, not premium, it required about 325 to make a pound. The worms were vigorous and healthy during the whole time of feeding, I I think remarkably so; indeed I do not know that I lost a single worm by disease. Being a healthy crop, I saved most of my cocoons for eggs, and I have about four pounds of the finest eggs I have ever seen. I stifled, probably, 25 lbs. of cocoons in order to make a specimen of sewing silk. August 4th I obtained a small paper of two crop eggs from Wm. Imlay, Esq., of Allentown; only 300 or 400 of them hatched, which I fed on my premium trees. These were also healthy and vigorous, but they did not wind under thirty days, and the cocoons were small. Owing to the impossibility of procuring eggs to hatch in successive crops, I have only raised 31 lbs. 14 oz. from my 1-16th of an acre, though my trees are smaller than yours in Burlington. This, I believe, is not more than one-half the amount I could have fed if I had been able to procure eggs and hatch them as wanted. The trees do not appear now to have lost any of their foliage. Enough has been done, however, to show that raising silk is profitable even the first year, in the hands of the most inexperienced. I hope you will write an article on this subject, and from what *has* been done, show what *can* be done. From my experience, I am perfectly satisfied there is no mystery or difficulty in feeding the silk-worm. If the eggs are from a healthy crop, and if the worms are kept clean and well fed, success is certain, and from the acknowledged enterprise of our people, I am perfectly satisfied the silk business will succeed, and at no distant period will become a source of vast national and individual wealth. May your valuable publication aid, as I have no doubt it will, in hastening this, by inducing our intelligent farmers and others to engage in the business.

R. V. M'Lean.

Freehold, N. J., Sept. 20, 1838.

CURIOUS EXTRACTS FROM THE ANCIENT LAWS OF VIRGINIA.

In a former part of this work, there were presented many passages of history, and especially extracts from the older historians, in relation to the general policy and economy, and agriculture, and illustrative of the peculiar habits and condition of the early settlers and inhabitants of the colony of Virginia.* It is proposed here to offer extracts, equally curious and interesting, from the old laws of the colony, and spreading over a greater variety of subjects than was permitted by the purpose of the article referred to above. Though all the extracts which will now be offered are taken from a single work, 'Hening's Statutes at Large,' which is accessible to every one, yet because it is a *law book*, and a voluminous one, its contents are scarcely known to general readers, and it is almost sealed to all others except the members of the legal profession. For this reason, whatever is curious and interesting in these old statutes, will also have, to most readers of the Farmers' Register, all the freshness and interest of novelty.

The following introductory remarks and statements of the compiler of the statutes, will best serve as the beginning of these extracts:

"In June, 1619, the first assembly ever held in Virginia, was convened by sir George Yeardley, then Governor, and met at James Town; which was at that time, and for many years afterwards, called "James Citty." Some account of the acts passed at this session, (taken from the Ancient Records relating to Virginia,) is given in a note prefixed to the acts of 1623–4; being those of the earliest period now extant.

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* See pp. 754 to 760, vol. III., Farmers' Register.

"In May 1620, we are told by historians, that another assembly was held in Virginia. *Beverley*, indeed, makes it the *first* legislature under the colonial government. But of the acts of this assembly there is no mention in the proceedings of the London Company; a circumstance which renders it extremely doubtful whether such an assembly was, in fact, ever held."—Vol. I. p. 119.

But this first legislation of the colonists seems never to have been formally considered and ratified by the London Company, the then proprietary government of the colony, and therefore the enactments of this earliest session, whatever they may have been, were of no authority; and it is therefore, probably, that no record of them remains. Hening says—

"The acts passed at the general assembly in 1619, were probably a crude, indigested mass, which never received the sanction of the treasurer and company for Virginia, in England; without whose approbation, *in a great and general court*, they could not have the force of laws."—p. 122.

The first actual legislation, then, occurred in the next session, which was in 1621, and when fifteen years had passed since the first arrival of the English settlers. Of this, the only account is in the following general statement, given in the words of the compiler. This extract presents the curious fact, that a large and prominent portion of the first actual legislation of Virginia, (as well as much of later date,) was devoted to the encouragement of the growth of silk—a culture which, after lying dormant for nearly two centuries, has now suddenly become one of the most engrossing interest throughout this country, and which now promises to be revived, and for the first time to be extensively and successfully prosecuted.

"In November and December 1621, another assembly was held: an event not mentioned by Stith, or any of our early historians. The acts of this session are very briefly noticed in the minutes of the London Company; and relate entirely to the introduction and culture of such staple commodities as the company in England recommended; particularly the article of silk, which seems to have engrossed nearly the whole attention of the legislature. Two acts, the one prescribing regulations for planting mulberry trees, the other directing, that in clearing land, no mulberry trees shall be destroyed, are first mentioned. The remaining acts of this session contain little more than an enumeration of the wants of the colony."—p. 119.

There was lately republished in one of the newspapers, and which has been thence copied into many others, "*an act, for mulberry trees*," passed in 1661, which was presented as the oldest legislation on the subject. And, subsequently, there appeared in another print, a correction of that opinion, in extracts from the earlier acts of 1656 and of 1657. These extracts will be given here, in their order of time. It is enough here to show, that silk-culture was a subject of legislative interest and action, thirty-five years before the earliest of these enactments, and forty years in advance of the other.

The next extracts will be from the "Laws and Orders concluded on by the General Assembly, March 5th, 1623–4." In every extract the spelling and punctuation of the original, (as given in the 'Statutes at Large,') will be preserved.

"For the encouragement of men to plant store of corne, the prise shall not be stinted, but it shall be free for every man to sell it as deere as he can.

"That there shall be in every parish a publick garnary unto which there shall be contributed for every planter exceeding the adge of 18 years alive at the crop after he hath been heere a year a bushel of corne, the which shall be disposed for the publique uses of every parish by the major part of the freemen, the remainder yearly to be taken out by the owners at St. Tho's his day and the new bushell to be putt in the roome.

"That three sufficient men of every parish shall be sworne to see that every man shall plant and tende sufficient of corne for his family. Those men that have neglected so to do are to be by the said three men presented to be censured by the governor and counsell.

"That all trade for corne with the salvages as well publick as private after June next shall be prohibited."

"That every freeman shall fence in a quarter of an acre of ground before Whitsuntide next to make a garden for planting of vines, herbs, roots, &c. subpœna ten pounds of tobacco a man, but that no man for his own family shall be tyed to fence above an acre of land and that whosoever hath fenced a garden and of the land shall be paid for it by the owner of the soyle; they shall also plant Mulberry trees."—p. 125.

"That the proclamation for the rates of commodities be still in force and that there be some men in every plantation to censure the tobacco."—p. 126.

Our ancestors were totally without light on the free-trade doctrine of modern political economy, and had little faith in self-interest serving as the best guide to direct the pursuits of industry. The statute book is full of regulations, like some of the foregoing, which were designed to encourage and compel the raising or keeping of certain products, and restraining or forbidding others.

The following orders of the same session, exhibit the then state of insecurity and peril of every settler. They were enacted in consequence of the recent massacre of many of the colonists by the Indians, in 1622, which was so near being as complete as was its design.

"That every dwelling house shall be pallizaded in for defence against the Indians.

"That no man go or send abroad without a sufficient partie will armed.

"That men go not to worke in the ground without their arms (and a centinell upon them.)

"That the inhabitants go not aboard ships or upon any other occasions in such numbers, as thereby to weaken and endanger the plantations.

"That the commander of every plantation take

care that there be sufficient of powder and amunition within the plantation under his command and their pieces fixt and their arms compleate.

"That there be dew watch kept by night.

"That no commander of any plantation do either himselfe or suffer others to spend powder unnecessarily in drinking or entertainments, &c."

"That such persons of quality as shall be founde delinquent in their duties being not fitt to undergoe corporal punishment may notwithstanding be ymprisoned at the discretione of the commander & for greater offences to be subject to a ffine inflicted by the monthlie court, so that it exceed not the value aforesaid."—p. 127.

Among the acts of October, 1629, first appears the policy, which was so long approved, of limiting the extent of the cultivation of tobacco, for the purpose of enhancing its price, and which was so often attempted to be enforced by legislation, and with so little success.

"It *was put to the question* whether for this yeare there should be an ordinance made and established for the stinting of the planting of tobacco. To this the opinion of the most voices was, that noe persons workeing the ground, which are all to be thithable, should plant above 3000 plants uppon an head.

"An exception is made where the familie consisteth of children and woemen which doe not worke in the ground, and they to plant not above 1000 plants per pol."—pp. 41-2.

The following are some of the proceedings of the governor and council, acting as a criminal court, in 1630:

"Dr. John Pott, late Governor, indicted, arraigned and found guilty of stealing cattle, 13 jurors 3 whereof councillors. This day wholly spent in pleading; next day, in unnecessary disputation: Pott endeavoring to prove Mr. Kingsmell (one of the witnesses against him) an hypocrite, by a story of Gusman of Alfrach the rogue. In regard of his quality and practice, judgment respited till the king's pleasure known; and all the councel became his security."—p. 145.

"Upon the presentment of the church-wardens of Stanley Hundred for suspicion of incontinency betweene Henry Kinge and the wife of John Jackson, they lyinge together in her husband's absence; it is thought fitt that the sayd Kinge shall remove his habitation from her, and not to use or frequent her company until her husband's retorne."—p. 145.

"Hugh Davis to be soundly whipped, before an assembly of Negroes and others, for abusing himself to the dishonor of God and shame of Christians, by defiling his body in lying with a negro;* which fault he is to acknowledge next Sabbath day."—p. 146.

The three following acts, which are copied entire, throw light on the policy and economy of the government. The legislative encouragement or enforcing of corn culture was as much the usage as restraints upon tobacco culture. Tobacco was then, and for a long time afterwards, the legal currency of the country; and the bringing bad tobacco into market and circulation, was therefore something like debasing the coin of the country. This induced the burning of the article, as counterfeit, as well as to punish the owner for the offence. This penalty lasted much longer than its causes. Within the last thirty-five years, tobacco, condemned by the inspectors, was still burnt by law, instead of being permitted to be converted to manure, for which purpose it would have been valuable.

"For the better furtherance and advancement of staple commodities, and more especially that of potashes and saltpeeter, *it is thought fitt*, that every master of a ffamily within the severall plantations of this colony shall use their best endeavours to preserve and keepe in dry and tight houses or casks all those ashes that proceede and bee made by the wood that is burned in clearing their grounds, that they may be ready at all tymes to be delivered to those that shall require the same to make experiment thereof. And that every master of a ffamily shall have a speciall care, after a notice thereof given, to preserve and keepe all their urine which shall be made in their severall plantations, to be disposed and bestowed as by a note in writing they shall receave directions the benefitt whereof shall the first yeare shall redounde to those that shall make the experiment. And the next yeare it shall bee lawfull for every planter to make the best benefitt hee can thereof to his own use. And for other staple commodities, as iron, salt, vines, &c. the whole assembly are willing and readie to yielde their best assistance in setting and raysing them, or any of them when they shall see any incouragement thereunto by such as shall bee men of experience and skill to perfecte such workes."—p. 151.

"To prevent the want of corne which oftentymes doth happen to this colony by reason of the neglect of planting sufficient quantities thereof for their necessarie provisions, *It is ordered*, that two acres of corne or neere thereabouts bee planted for every head that worketh in the grounde, and the same to bee sufficiently tended weeded and preserved from birdes, hoggs, cattell and other inconveniences. And if any planter shall be found delinquent therein hee shall forfeite all his tobaccoe which hee made of his cropp that yeare, the one halfe, to the informer, the other to bee imployed to publique uses for the good of the country."—p. 152.

"For the improving the planting of tobaccoe the neglect thereof in the curing hath caused the same to bee of base price and small esteeme to the discredit and disadvantage of the whole colony in generall, for the preventing and avoyding whereof, *It is thought fitt and accordingly ordered*, That noe person whatsoever shall plant or tende above two thousand plants of tobaccoe for every heade within his family including woemen and children. And to the intent that noe tobaccoe of bad condition may be transported out of this country, *It is further ordered*, That if any man hereafter shall make any bad, or ill conditioned tobaccoe and offer to pay away the same to any person or persons, eyther for debts, marchandize or any other

* Negroes were first introduced in Virginia, from a Dutch ship, in the year 1620. See Beverley, pa. 51. Burk's Hist. vol. i. p. 211.

commodities, it shall be lawfull for the commander of every plantation with two or three discreete men of the said plantation uppon view thereof to burne the same. And the partie that shall bee found delinquent in any particle of this order shall bee hereby barred from planting any tobaccoe until hee bee re-admitted by a General Assembly."—p. 152.

"For the better increase and multiplying of cattell in this colony, it is thought fitt that all the female increase of neate cattell bee with all care and diligence preserved and kepte. And that noe female kinde of cattell bee killed unlesse they bee such as are eyther past breedinge, or are likely to dye by some infirmity. And if any person or persons shall doe contrary to this acte they shall undergo such censure as the Governor and Councell shall thinke fitt to impose upon them." p. 153.

"Mynisters shall not give themselves to excesse in drinkinge, or riott, spendinge theire tyme idellye by day or night, playinge at dice, cards, or any other unlawfull game; but at all tymes convenient they shall heare or reade somewhat of the holy scriptures, or shall occupie themselves with some other honest study or exercise, alwayes doinge the thinges which shall apperteyne to honesty, and endeavour to profitt the church of God, alwayes haveinge in mynd that they ought to excell all others in puritie of life, and should be examples to the people to live well and christianlie." p. 158.

"Uppon a remonstrance preferr'd to the assembly, complayninge that the ffrenchmen who were, about ten yeares since, transported into this country for the plantinge and dressinge of vynes, and to instruct others in the same, have willinglie concealed the skill, and not only neglected to plant any vynes themselves, but have also spoyled and ruinated that vyniard, which was, with great cost, planted by the charge of the late company and theire officers here; and yet notwithstandinge have receaved all favour and encouragement thereunto, which hath dishartened the inhabitants here, *It is therefore ordered* that the sayd ffrenchmen, togeather with theire families, be restrayned and prohibited from plantinge tobacco, uppon penaltie to forfeit theire leases, and imprisonment untill they will depart out of this colony."—p. 161.

"Be *it also further ordered*, That no planter or mayster of a famylie shall plante or cause to be planted above two thousand plants per pol, and that those that shall not plante or be otherwise imployed shall not transferr or make over theire right of plantinge unto any other; and to prevent any greater quantities, every planter or mayster of a famylie plantinge a cropp of tobacco, more or lesse, shall be tyed to procure one of his neighbours or some sufficient man to come and nomber his or theire plants of tobacco, who will uppon his oath declare and testifie unto the commander of that place, before the tenth day of July, that he hath counted and nombred the sayd plants, and shall say in his conscience the iust and true nomber of them, which thinge yf the sayd planter or mayster of a famylie shall neglect, or that the nomber of the plants is found to exceede the proportion of 2000 per pol, then the commander is hereby to present it to the next mounthlie cort, and the commissioners thereof shall give present order to have all that whole cropp of tobacco cutt downe under panye of imprisonment and censure of the governor and counsell and grand assembly yf they neglect the execution thereof. Also uppon the neglect of the commander, he shall be censured in like manner."—p. 164.

"It *is likewise enacted*, That no person shall tend, or cause to be tended, above 14 leaves, nor gather or cause to be gathered above 9 leaves uppon a plant of tobacco; and the several commanders shall hereby have power to examine the truth thereof; and yf any offend, to punish the servants by whippinge, and to bind over the mayster unto the next quarter cort at James Citty to be censured by the governor and counsell."—p. 164.

"It *is ordered and ordeyned*, That no person shall tend, or cause to be tended any slipps of old stalkes of tobacco, or any of the second cropps, uppon the forfeiture of the whole cropp, whereof halfe to be to the informer, and halfe to publique uses as aforesayd."—p. 164.

"It *is likewise ordered*, That every man workinge in the ground, shall plant, or cause to be planted, and sufficientlie tended, this yeare, at the least two acres of corne per pol, uppon penaltie of forfeiture of their whole cropp of tobacco, yf uppon vewe thereof they shall be found deficient." p. 166.

The following act, passed in the session of 1631-2, shows the continued state of danger and alarm:

"All men that are fittinge to beare armes, shall bringe their pieces to the church uppon payne of every offence, yf the mayster allow not thereof to pay 2 lb. of tobacco, to be disposed by the churchwardens, who shall levy it by distress, and the servants to be punished."—p. 174.

In 1632, an unusually long and particularly penal act was passed for improving the quality of tobacco. It required that no tobacco should be bartered for other commodities at a lower rate than sixpence the pound; that no planter or master of a family should plant more than 2000 plants "per pol;" that no more than 14 leaves on each plant should be tended, nor more than nine leaves gathered from each plant of tobacco; and that no second crop should be made from the suckers, (or "seconds") growing after the cutting off the first crop.

Another act of the same session compelled the planting of vines; but it does not appear that this, or any other of the means of encouragement used, had any important effect in causing wine to be made.

"It *is provided and ordered*, That all workers upon corne and tobacco shall this ensuinge springe before the first day of March next ensuinge, plant, or cause to be planted 20 vyne plants per pol uppon penaltie to forfeite one barrell of corne for every one that shall make default one halfe to be to him which shall make information thereof and the other halfe to publique uses. And the commissioners for the mounthlie corts shall have full power to heare and determine this matter and to

see that the sayd vynes bee weeded, tended, and well preserved."—p. 192.

This act was repealed in the ensuing year, by the following, which directs other cultures:

"It *is ordered*, That the 25th act made the 4th day of September 1632 be repealed and voyd. And that every planter as soone as he may, provide seede of flaxe and hempe shall sow the same."—p. 218.

The following short act, is the origin of the present abominable law of inclosures, which operates now as a heavier tax upon agriculture, and a greater absorber of its profits, and obstacle to its improvement, than all the other burdens imposed in taxes, or otherwise:

"Every man shall enclose his ground with sufficient fences or else to plant, uppon theire owne perill."—p. 199.

Another act of the same session, 1632, forbids the killing of wild hogs, on the lands of others, and offers a reward for killing wolves. The settlements, then, were all in the lower tide-water counties, and the falls of the rivers were as yet in "back-woods." It seems that at least one act of protection had been effective—that for increasing the number of cattle; whereupon the assembly determined not only to continue the prohibition to kill female cattle, but also to prohibit their being sent abroad to the other colonies, for sale:

"Whereas it doth appeare that the late preservation of female neate catle within this colony hath much encreased the nomber of them and inritcht this colony, and the continewance thereof yet for a tyme will much encrease the nomber of them further; *It is ordered*, That no cowes, heifers, or female catle be transported to any other parts out of the government of this colony now established, upon the forfeiture of the catle soe transported, or the true value of them, the one halfe of which forfeiture shall be to the informer, and the other halfe to publique uses. And this act to continew in force untill the next Generall Assembly."—pp. 218-19.

The limitations on producing tobacco being still found insufficient to increase the price, the following additional act was passed, in 1639, by which *half of the good tobacco*, as well as all the bad, was ordered to be burnt.

"Tobacco by reason of excessive quantities made being soe low that the planters could not subsist by it or be inabled to raise more staple comodities or pay their debts, *Enacted*, that the tobacco of that year be viewed by sworn viewers and the rotten and unmerchantable and half the good to be burned. So the whole quantitie made would come to 1,500000 without stripping and smoothing: and next 2 years 170 lb. tobacco per poll stript and smoothed was to be made which would make in the whole about 1,300000 lb. and all creditors were to take 40 lb. for a hundred." pp. 224-5.

But tobacco being the current money in which all obligations were made, and debts paid, it followed that the effecting the much desired object of raising the price, would also as much increase the actual amount of every existing debt. The next thing necessary was to cut down every debt to what the assembly deemed a proper amount, which was provided for in the several following acts of the same session:

"Noe man to be obliged to perform above half his covenants about freighting tobacco in 1639." p. 225.

Debtors were "not to pay above two-thirds of their debts during the stint," or prohibition of cultivation of tobacco.—p. 226.

An act to plant orchards, made in 1636, (of which there is no other notice,) was reversed in 1639-40.

The following provision, made the same year, was a departure from the general principle of the fence law, but which unfortunately was not persevered in:

"Hoggs to be confined in pens by night and to have keepers by day or owner to satisfie all damages done by them."—p. 228.

In 1642, the owners of hogs were restored to the rights which they continue to retain to this day:

"Be it also enacted & confirmed, That ev'rie planter shall make a sufficient fence about his cleared ground, And if he be deficient therein, what trespass or damage he shall susteyne by hoggs, goats or cattle whatsoever shall be to his own losse and detriment."—p. 244.

The following enactment was made to guard against a singular kind of waste—the burning of houses, when left vacant, merely to get the nails:

"And it is further enacted by the authoritie aforesaid, That it shall not bee lawfull for any person so deserting his plantation as aforesaid to burne any necessary houseing that are scituated therevpon, but shall receive so many nailes as may be computed by 2 indifferent men were expended about the building thereof for full satisfaction, reservinge to the King all such rent as did accrew by vertue of the former grants or planting of the same from the expiration of the first seaven years."—p. 291.

"To rectifie the great abuse of millers, Be it enacted that no person or persons shall for the grinding any grayne that shall be brought vnto them take above the sixth part thereof for toll." p. 301.

The following singular enactment doubtless was expected to remedy all complaints against the gentlemen of the legal profession, as it aimed to destroy all the attorneys at one blow, by forbidding their receiving any fees for their services. It is to be presumed, from the results, that the prohibition did not work well.

"Whereas many troublesom suits are multiplied by the vnskillfullness and coveteousness of

attorneys, who have more intended their own profit and their inordinate lucre than the good and benefit of their clients: Be it therefore enacted, That all mercenary attorneys be wholly expelled from such office, except such suits as they have already vndertaken, and are now depending, and in case any person or persons shall offend contrary to this act to be fined at the discretion of the court." p. 302.

(To be continued.)

UNROTTED LEAVES AS MANURE. LATE SOWN WHEAT.

To the Editor of the Farmer's Register.

On reading your article, in the November number of the Register, on the subject of the use of leaves as a manure, I am induced to offer you the following experiments which I have made with them, as you have solicited communications from the patrons of the Register. Early in the spring of 1837, I covered about 15 acres of highland, with leaves taken from land cleared the previous winter. The land on which I put the leaves was very rolling, and about sixty feet above the level of the flat land on the river. It was very much overrun with blue grass, and required a cleansing crop. The leaves were spread very thickly, and then plastered, at the supposed rate of a bushel and a-half to the acre. The land was then ploughed deeply with a two-horse plough, and was soon after planted in corn, and cultivated altogether with the coulter and hoe. At first it was backward in growing off; but, after it started, it grew rapidly, and withstood the drought of the summer, and continued green longer than my low-ground crop. I did not ascertain the difference between the product of this piece of land and other highland corn that I had on richer and better land; but the result was decidedly in favor of that to which the leaves were applied.

In the fall of 1837, I covered with leaves, quite thickly, a piece of highland of nearly twenty acres, and sowed plaster on two-thirds of the lot, not having enough to sow it all. The leaves were ploughed in, early in January, and before planting corn the land was well harrowed. The cultivation of the crop as before was altogether with the coulter and hoe. It withstood the extreme drought of the past summer better than my low-ground corn; and the fodder continued longer green on it, and the yield, though not ascertained by measurement, was a very good one.

I am quite a novice in farming; but the result of my experience (though differing from yours) is, that leaves ploughed in, the earlier in the fall the better, are a valuable manure for corn. They keep the roots moist, and yield nourishment to the plant, and in a dry season have not the injurious effect, that farm-pen and stable manures have, of making the crop so liable to burn.

In the fall of 1836 I was stopped in sowing wheat by rain on the 13th November, and though I had only a few days' ploughing, the weather continued so unfavorable that I did not finish sowing until the 14th December. The wheat sowed between the 1st and 13th November had come up before I finished sowing; and that sowed last did not come up until about the middle of February. It then came up very well, and was nearly though not quite so thick as the rest of my field, all being on low-grounds. The weather just before harvest was so wet as to cause rust in a considerable part of my crop. I found on examination that the wheat I had sown between the 1st and 13th November was very much rusted, and that sown on the 14th December was entirely free from it; and the latter yielded as well as the rest of my low-ground crop. This, though it is at war with the speculations of some of the correspondents of the Register, is no guessing matter, as I have taken it from a memorandum made at the time. The kind of wheat sowed was purple straw and red bearded, which had accidentally got mixed, and they are both late kinds. That sowed in December had only an equal chance with this humbug of spring wheat, and I am quite sure the yield was fully equal to any spring wheat I have seen. Can you, Mr. Editor, or any of your correspondents, explain why the wheat sown in November should have the rust, whilst that sown one month later did not, when every thing was in favor of the first? It was sown next the river, where the land is light and loamy, and was put in in fine order; whereas that sown in December was on stiff land, inclined to be wet, and, moreover, was ploughed before the land was in good order. The sowing of wheat this fall is unusually late, and the fact above stated may not be uninteresting to your readers.

A PLANTER.

James River, November 10th, 1838.

SINGULAR AND FATAL DISEASE OF HORSES.

To the Editor of the Farmers' Register.

Pasquotank County, N. C. Oct. 25th, 1838.

I have lost the greater part of my horses in about 15 days. The 1st of October I discovered two were sick, and they continued to sicken and die until I had lost seven. They were sick from one to ten days. The symptoms were at first, when moving, a rattling in the throat, and unwillingness to move quick; a discharge from the nostrils of a thick ropy phlegm, and, as the disease advanced, it changed to matter, and was offensive, except one; they did not appear to be in violent pain; they had a disposition to eat and drink, but were not able to swallow—had not the least swelling about the throat—eyes not at all affected, although at times a high fever. The second horse that was taken sick, after living three days, and being unable to stand, I had killed for the purpose of opening. I was very particular in examining; the lungs were very much enlarged, and discolored; the same substance that was discharged from the nose was mingled with the lungs. There was nothing in the stomach but water; the rest of the intestines were filled with such food as I should have expected to have found in a horse in health, apparently not affected in the least. No obstruction from the throat to the stomach. The next was opened by a physician. His heart was very much enlarged, the lungs in the same situation as the first. That horse lived but 15 hours after I discovered him to be sick. The day before his death he eat hearty and appeared to be well. The next I opened lived 10 days; his lungs were diseased more than the others, and the discharge

from the nostrils very offensive. His heart was not affected. The 4th was in the same situation. As soon as I discovered the disease was a fatal one, I separated my horses, and moved them a quarter of a mile from the house; but it did not have the desired effect. I have two horses that I think will recover. All of my horses were affected but one that had the staggers a few weeks previous, and 3 colts. They were fed with cut oats and fodder, and when they were used they had corn. They were all fed in one stable except the colts, and all ran in the same pasture during the day, but my saddle horse; he remained in the stable, except when in use. He was the last attacked, and had the disease light, I think in consequence of his being bled very freely before and after he was taken. One of my neighbors had a mare and colt, that remained in my pasture all the summer and fall, which were not affected. The food that was given the horses had not been damaged, and was sweet and sound; they were watered in Pasquotank River. The stables were littered with corn-stalks and wheat-straw—were dry, and had no unpleasant smell that I was aware of. The horses had salt once or twice a week. Feeling very anxious to account for the cause of the affection, and knowing no better source for information than your Register, I have applied to you, thinking that you or some of your subscribers may account satisfactorily for it.

THOMAS HARVEY.

A SUGGESTION FOR IMPROVING CHIMNEYS.

To the Editor of the Farmers' Register.

Surry Court-house, Va. Nov. 7th, 1838.

A plan has suggested itself to me for the construction, as I think, of an improved chimney. It is simply this: In a common chimney, from about the middle of the hearth, and just under the spot designed for the fire, let there descend a channel or opening, in an inclined direction towards the back, so as to pass out on the back of the chimney the thickness of six or eight bricks below the level of the hearth. The size and form of this feeder, as I would call it, can be varied according to choice. I should prefer having this, or at least the inner part, long and narrow, say one half the width of the fire-place, and to stretch across, or in the direction of the fuel laid on, so as to keep up a current of fresh air to the whole at once. The outer part of this opening may be of a different form; round, square, or in any shape sufficiently large to admit of the passage of the ashes, &c. outward, and a current of air inward.

The advantages to be derived from this plan, are, I think, several; and one of which is of particular importance. This is derived from the continual current of atmospheric air streaming through this channel, and by this means affording to the combustible matter, from an inexhaustible source, an abundant supply of oxygen gas, the necessary and indispensable agent of all combustions; thus feeding the flame from without, (instead of from within the room, to the great detriment of the air for animal respiration,) which is a matter deserving much more attention than is generally given to it. Close confined rooms, with fires burning in them for a length of time, the burning of candles, lamps, &c., and the breathing of persons in the same room, have a poisonous effect upon the lungs of animals. This, no doubt, is the source of many pulmonary and fatal diseases. We should ever keep in mind, that combustion and animal respiration are supported from the same source; and to be regardless of this, is to be regardless of our health, and consequently our happiness. But this is not the only advantage to be derived from this plan. It would supersede the disagreeable and dangerous job of taking up and moving the ashes from the hearth, which is so frequently necessary. These, as they were formed, would be saved or separated from the coarser unburnt coal by small rods of iron, or a coarse wire grate, let into the hearth over the mouth of the feeder, and conducted away through the opening into whatever may be prepared for their reception. Some precaution would be necessary in keeping the fresh ashes from the wind during dry weather.

D. S.

THE NORFOLK COMMERCIAL CONVENTION.

The second commercial convention of Virginia has been recently held; and the manner of its procedure, and conclusions reached, are, in the general, such as to promise well for the improvement and commercial independence of the state. This convention, more fortunate than its predecessor, kept clear of party questions, and even of the *suspicion* or imputation of the influence of party objects. This was as it should be; and Virginians and Carolinians, of different political parties, and of various interests, met here, with the one common object which all zealously and earnestly urged—that of sustaining the commercial independence and general good of the states which they represented.

The most important and practical results of the deliberations of the body, will be presented in the reports of committees considered and deliberately approved, and in the resolutions founded thereon, and adopted by the convention. These were, the report of the general committee on the causes of, and remedies for, the decline of our direct trade with Europe—the report of the committee on agriculture—the report of the committee on manufactures—and the report of the committee on banking—together with the resolutions on each, as amended and passed by the convention; and also the single general resolution adopted on the policy of the commonwealth in regard to internal improvements, by the construction of canals, railways, &c. This subject, important as it is in itself, was here but subsidiary to the main object of the convention, and should by no means have been permitted to occupy the foremost ground in debate, and the greater part of the whole time of the session. But, unluckily, some thought an opposite course expedient; and which was more

like to subserve other interests than the great cause of internal improvement. The result of all the long and earnest debate on this subject was the adoption of the following resolution, (as amended by the convention,) the remainder of the series being indirectly rejected, by a close test vote to lay on the table, to remain there.

"Resolved, in the opinion of this convention, that a liberal system of internal improvement is one of the best foundations for a direct import trade, and the surest means of effecting it."

It would be very incorrect to infer that those who opposed the rejected resolutions were opposed to a proper and liberal system of internal improvement. It is believed, that if there were any members so opposed, they were very few in number. But the objections entertained were to the wide scope and ultra character of the resolutions—the descending to details and propositions of very doubtful character, at least, and which, even if judicious, and proper to be approved, belonged only to a body having legislative power—and in addition to these objections, that of spending the limited time of the convention in debate, which would certainly be fruitless and profitless to the public good, upon an inferior question, which it was impossible to fully consider, or harmoniously to agree upon.

But, notwithstanding the waste of time on these rejected propositions, there was great deliberation and attention given to the several reports and resolutions which have been referred to. Of course, a body which can enact nothing, is not required to enter upon details, nor to scrutinize them very closely. But the main questions on the business of the convention, in their general purport and bearing, were decided upon carefully and deliberately. There never was a similar body more attentive, more laborious, more guarded against surprise, or the insecurity caused by indolence and carelessness, until all that was considered the business of the convention had been decided upon. After the last expected of these subjects had been voted upon, (which was the report and resolution of the committee on manufactures,) and when the necessary hour of final adjournment was close at hand, and nothing more was counted on but the usual resolutions of mere form and routine, many of the members retired from the hall, and most of those who remained either were unable to hear the resolutions offered, or did not attend to them. So it was, that in the conclusion of the last day's session, there were resolutions offered and passed by a very few voting either for or against, through inattention or by surprise, which certainly would not have passed in any previous time of the session. It is as needless to specify the subjects of such action, as it is unpleasant to have to make any such statement.

The direct results of this meeting will be of far less value than the indirect. Much good is done merely by the meeting of fellow-citizens from distant localities, having (as supposed at least) rival and conflicting interests, and who have heretofore permitted themselves, in a greater or less degree, to be influenced by sectional prejudices, and commercial jealousy. Better feelings have been already produced, and they are cherished by all parties; and we are perfectly satisfied, that if these conventions are continued, even if no direct operation whatever should result, incalculable benefit will be effected, in removing narrow-minded jealousy and blind hostility, and producing instead those opposite feelings between every different locality and every different interest, which all true Virginians and southrons must desire. Under these impressions, we heartily approve of the two resolutions of the convention, by one of which they recommend another convention to be held next November, in Raleigh, for North Carolina and Virginia; and by another, recommend to those states to send some members to the commercial convention of the more southern states, which will be held in Charleston next May.

The convention agreed with unexpected unanimity in favor of the general recommendation of increased banking capital and banking facilities, as means necessary to enable our commerce and manufactures to have a chance for advantages equal to those of the northern cities. But the manner of increasing, and all details, (on which there would have been irreconcilable differences of opinion among some who voted together in the affirmative,) the convention wisely left to be settled by the legislative power. There are few reflecting persons who will not admit that Virginia and North Carolina have already lost much by not availing sufficiently of the advantages and benefits of banking upon correct principles, while they have suffered their full share of the evils and losses of the bad system which has prevailed. There were members of the convention who voted affirmatively on the general question of the expediency of increased banking facilities for Virginia, who are utterly opposed to the main features of the existing bank charters—and particularly to the partnership interest, and connexion, between the banks and the state, and to the virtual irresponsibility of the banks for all violations of their charters and other legal as well as moral obligations, which irresponsibility necessarily grows out of that connexion, by giving them a controlling influence over the legislature. We fully concurred in these views; and would wish that the trade and business of banking should be left as free from the prohibitions of law, and the monopoly privileges of the older institutions, as any other branch of

trade; but *provided always and surely*, that all corporations and individuals who may pursue the trade of banking, shall be held as strictly responsible for the performance of all their obligations, as are those who are engaged in other trades. We care not to what extent banks may be put in operation in Virginia, (and without charge of bonus, or any other share of their profits on the part of the state, as monopoly-giver,) so long as proper care shall be used, (as is expressed in the report of the convention,) that "*provision be made against the abuse and perversion of their powers.*"

We proceed now to give the several reports above referred to, together with the resolutions of the convention, founded thereupon.

Report and resolutions on the causes of the decline of the direct foreign trade, and the means of remedy.

The committee who were instructed to consider and report upon the object of this convention, respectfully report, that they have carefully considered the important questions submitted by the convention for their examination. In the prosecution of their inquiries into the latent causes of our commercial decline, they have avoided all questions which involve subjects of party preference or political disagreement. Such discussions might not, indeed, be wholly irrelevant, but they believe that there is sufficient common ground upon which every friend of southern commerce may consistently stand, without touching subjects of party dissension, or trenching upon the lines, which divide the public sentiment at the present day. Your committee, therefore, without slurring over any inquiry, which they deemed essential to a correct understanding of the important questions confided to them, have confined their notice to those plain, simple and conceded truths, which only require to be stated to secure the assent of all.

Commerce is but the exchange of property, and however diversified and intricate some of its operations may seem, they are merely designed to facilitate such exchanges. The existence of trade between any two countries, is evidence that neither can sufficiently supply itself from its internal resources, with those things that may gratify the wants of its people. No nation would be guilty of the supererogation of sending abroad to obtain what it was already abundantly possessed of; as no individual would seek his supplies beyond the limits of its own domain, if he could always find there whatever might satisfy his real or his fancied wants.

The same necessity which impels a nation to seek abroad those things, which its own industry cannot supply, would prompt it to obtain what it wanted from the nearest and most convenient point; nor is it probable that its trade would ever be diverted from such a channel so long as its own products could be advantageously exchanged for those of such neighboring community. An individual residing in the town of Hampton, would scarcely submit to the delay and expense of obtaining from the city of Richmond any article that he could purchase upon as good terms in Norfolk Borough; and when he had effected his purchase in Norfolk, he would be still less disposed to bear the unnecessary cost of its transportation to Richmond before receiving it at his own home. In the case supposed, the interests of the purchaser would be as injuriously affected, where the expenses of this circuitous conveyance were paid by the seller, as they would be where he is himself immediately subjected to the increased cost; for, it is obvious that the seller, by undertaking to pay the charges of such an indirect transportation, would be unable to sell his goods at as low a price as he otherwise might be, exactly the amount which he is to pay for their conveyance.

Having shown that "a direct trade is the natural channel of communication between nations," the committee do not deem it necessary to enter into any argument to prove that the trade which supplies the people of Virginia with foreign goods, imported into the northern ports, is *not* a direct trade. To those who are at all acquainted with the geographical relations existing between us and those by whom this trade is conducted, such an argument would be a mere waste of time.

They proceed to consider the more important inquiry, whether any and what part of our consumption of foreign merchandise, is supplied by means of this indirect communication. Upon this point, information has been obtained of as precise a kind as the nature of the case will admit; and it places in a striking light the disadvantages to which this and the other southern states are subjected, from the present condition of their trade. Were there not the most indisputable evidence of the fact, it would scarcely be credited, that when the total imports of the United States amounted to $126,521,332, the imports of Virginia amounted only to the sum of $837,325; while of the total exports, estimated at $104,336,973, those of Virginia amounted to near five and a-half millions of dollars. Of the above amount of imports, those of New York alone exceeded $73,000,000, while the imports into North Carolina were less than one-fourth of a million. Those of Massachusetts amounted to $17,672,129, while South Carolina imported but to the value of $1,787,267. Those of Pennsylvania to $10,479,268, while Georgia received little more than $550,000, and Alabama less than $400,000.

In further illustration of this branch of the subject, the committee present the following extract from the able report submitted to the late convention at Richmond, by their committee, the statements and estimates of which, were based upon the latest official returns, and are believed to be entirely accurate. It will be seen that they are in close accordance with the statements presented above. "On examining the official returns it will be found that the exports from this state, on an average of the three last years, terminating on the 31st December last, amounted to $5,265,461, and the imports to $816,887, the former being to the latter, nearly as thirteen to two. For the same period, the average exports of all the staple states amounted to $72,107,039, and their imports $22,303,656, while the exports of the other states for the same period amounted but to $29,316,019, and their imports to $116,908,721, making the exports of the staple states compared to their imports as 7 to 2, while the exports of the other states are to their imports as 1 to 4."

The report, after adverting to the fact, that the official returns do not give the coasting trade, and

that many of the exports from the northern states are products of the south, proceeds as follows. "From these results it appears that of the exports of this state nine-tenth part is direct and one-tenth circuitous through the ports of the other states—and assuming that her imports should be equal to her exports, only one-seventh part is direct and six-sevenths circuitous. Nor is that of the staple states generally in a much better condition. Taken in the aggregate, nine-tenths of their exports are direct, and one-tenth circuitous; while of their imports on the same assumption, only two parts are direct and seven circuitous, subject to all the expense and burthens incident to such intercourse.

Considering this subject upon the received principles of political economy, it would be a natural inference, that a diminution in the imports of any nation would be attended by, or, at least, would indicate a corresponding decrease of its exports; and yet, startling as the fact may seem, the reverse is true of the trade of the different sections of this country. The exports of the southern states have been steadily increasing, during the whole period that their imports have been dwindling to their present insignificance, while the enormous increase in the imports of the northern states, has been attended with so slight an improvement in the sum of their own products, exported to foreign countries, as to be scarcely worthy of mention. In the year 1830, the exports from the United States, of the products of agriculture, amounted to near $47,000,000, of which the articles of cotton, tobacco and rice alone, constituted more than four-fifths; and in the short space of four years, the exports of the products of agriculture had increased to upwards of $67,000,000, of which the exports of cotton alone exceeded in value the whole agricultural exports of 1830. On the other hand, the exports of manufacturers, which were chiefly the product of northern industry, amounted in the same year to only $6,258,131, and in the year 1834 to but $6,648,393, showing a trifling increase of less than $400,000, while in the same period, the increase in the value of the agricultural exports, which were chiefly the products of the south, amounted to more than twenty millions of dollars.

If we confine our notice to the great staple of cotton, which is peculiarly the product of southern industry, the enormous increase in our exports will be placed in a yet more striking light. This article was not even cultivated in the United States until about the year 1790; but in ten years afterwards, the crop was estimated at 35 millions of pounds; in 1810 at 85 millions, in 1820, at 160 millions, in 1830, at 350 millions, and at the present day it may be fairly computed to exceed 500 millions of pounds. In the year 1830, after supplying the large domestic demand, the exports of cotton to foreign countries amounted to near 30 millions of dollars, and in the year 1834 to the astonishing sum of fifty millions.

Thus is exhibited the singular anomaly, of a country losing the command of its import trade, as it really improves in its capacity to control it. The extent of this decline, the committee now propose to consider. It is a well known fact, that before the establishment of the present government of the United States, the imports of Virginia largely exceeded those of any other State, being at one period nearly five times greater than those of New York, and even more than the aggregate of the whole New England States. The address of the second commercial convention at Augusta, quoting from a writer in the Richmond Whig, states the value of the imports of Virginia in 1769 at £851,140 sterling—New England States 561,000—New York, 189,000—Pennsylvania, 400,000, and South Carolina, 555,000.

The committee deem it unnecessary to exhibit the successive stages of deterioration in the imports of Virginia, and the other southern states. Let it suffice, to invite attention to the contrast now presented, in the condition of our import trade, at the last named period, when its value was near five times greater than that of New York, and its present state of comparative nothingness, when it is ninety times less.

It is due to candor, and to the character of the southern people for energy and intelligence, to state that the decline of a considerable portion of our foreign import trade, may be accounted for in the fact, that we now derive from the northern states many of those articles that we formerly imported from abroad. At no very remote period, we were dependent upon Great Britain for even such wares and fabrics as are now often manufactured in our own households; and it not unfrequently happened that orders were sent abroad, for bricks and other materials for constructing our very dwellings. While we yet stood in the relation of colonies to Great Britain, the hard policy of the mother country repressed all our endeavors to establish manufactories, of even the simplest articles, and, in some cases, visited with severe penalties those who embarked in certain prohibited employments. It is known that this rigorous system of colonial oppression was a fruitful source of those dissensions, which resulted in the establishment of our national independence. That some idea may be formed of the extent of the importations into Virginia of those articles that are now chiefly produced by the domestic industry of the country, the committee present the following statements, compiled by a well known writer several years before the American revolution. "The people [of Virginia] may amount to about five hundred thousand, which may reasonably be supposed to bring no small advantage to their mother country—as from hence they are all supplied WITH ALL THE NECESSARIES OF LIFE, such as linen, silks, India goods, wine, and other foreign manufactures: and of our home ones, cloths, serges, stuffs, bays, hats, and all sorts of haberdashery ware, hoes, bills, axes, nails, adzes, and other iron tools, clothes ready made, knives, *biscuit flour*, stockings, shoes, caps for servants, *and indeed almost every thing that is made in England, to the amount of near* 1,000,000*l. sterling*, which is repaid mostly in tobacco, of which it is supposed by the nicest calculators, that near one hundred thousand hogsheads are, in time of peace, imported yearly, *employing between three and four hundred ships*, navigated by upwards of four thousand sailors." *Wyndham Beawes.*—From the details given by the same authority, of the trade of the New England States, it will be seen that they were themselves dependent upon the mother country, at that time, for those wares, which they now supply in considerable quantities to others. He says, "They take from hence *all kinds* of mercery goods, linen, stockings, shoes, sail cloth, cordage,

haberdashery ware, and a vast many other things."

The loss of a portion of our foreign imports is thus sufficiently accounted for, in the substitution of a nearer and more convenient source of supply. Such a diversion of our trade is no proper subject of regret. On the contrary, it furnishes, both to the manufacturing and to the staple states, occasion for mutual rejoicing. It is, therefore, in no spirit of complaint, that we refer to it as one of the causes of the diminution of our foreign imports: but merely to show that it has not been overlooked by the committee, and that due allowance has been made for its operation, in producing the decline of our foreign trade. Did we receive from the northern states only such merchandise as is the product of their own industry, we should be constrained to admit that the evils which we complain of are unreal and shadowy; and that the decrease of our foreign imports was but the evidence of the superior advantages of the domestic trade. But when it is recollected that the large importations made into their ports, are designed to supply not merely their own consumption, but that of the southern people also, it can scarcely be contended, that the present condition of our commerce arises only from the cause alluded to.

As to the causes which have had the most powerful operation in producing the injurious results which the committee have noticed, much difference of opinion exists. The funding system, the Bank of the United States, the tariff, have been attacked and defended, in turn, by their respective opponents, and advocates, as the agents of mischief, or the fruitful source of good. Unfortunately, these measures (the last two, at least,) are too nearly connected with the party preferences of the present day, to receive that dispassionate examination which would be necessary to determine how far their agency had operated, for good or for evil, upon the interests of southern commerce. It is the less needful indeed to enter upon such an inquiry, as its successful result, however it might gratify an enlightened curiosity, could lead to few consequences of a practical nature. The bank no longer exists, and the protective policy is believed to have been abandoned. Whatever may have been their effects, they have now ceased to operate; or if they are still felt, they can be neither checked nor promoted, by a solution of the question, whether the decline of our foreign trade was in any wise attributable to them.

There is, however, one cause of this decline, which the committee cannot omit to notice, believing that a knowledge of its operation may be useful, in itself suggesting its appropriate remedy. They allude to the withdrawal of British capital invested in commerce in this and the other southern states, anterior to the revolution. The business of the colonies was conducted, for the most part, by the agents of British capitalists; and even the resident merchants were chiefly foreigners, whose means were supplied from the mother country. The effect of the revolution upon such a state of things, may be easily conceived. Most of the agents were recalled—many of the resident merchants, having no permanent attachment to the soil, and either feeling no sympathy with our grievances, or taking part against us, returned to their transatlantic homes, while the number of those that remained was gradually reduced by death and retirement from business. The withdrawal of so large a portion of our commercial capital, could not but exercise a prejudicial influence upon our foreign trade. It is true that the same result was experienced in the northern states; but, as will be presently seen, in a much less degree. The principal exports of the colonies had been supplied by us, and to us came the far greater portion of the articles that were necessary to purchase them. The merchandise that was thus sent to us being owned by British merchants, and transported in ships belonging to British capitalists, and for the most part manned by British seamen, there could be no motive in policy or reason, for sending them to any other ports than those where their freights could be most conveniently received or discharged.

It was necessary that the vacuum produced by this withdrawal should be supplied. In the competition that ensued for carrying on the trade, thus thrown open, the greater advantage would be secured by those whose condition better fitted them for conducting it. We were in some respects more illy prepared, than the northern States, for engrossing the profits of this trade. Anomalous as it may seem, our very wealth was, to this extent, a source of disadvantage. As has been already shown, the products of our soil were much larger in proportion to our population, than those of the northern states. The rewards of agricultural labor were, of course, richer with us than with them; as it is obvious that where a large production is to be divided among a small number, the average distributive share will be greater, than where the reverse is the case. It would follow that their labor would be diverted before ours from the cultivation of the soil to the pursuits of commerce and manufactures. *They* would be induced to embark in these new employments by the hope of any compensation greater than that which rewarded their agricultural industry; while *we* could not afford to abandon the pursuits of tillage for any recompense short of that which husbandry would yield.

Having thus a larger portion of their capital invested in the pursuits of commerce, they were enabled to compete with us successfully, for that trade which was properly our own. Had they established their residence among us, and imported directly into our own ports the merchandise which was purchased with the products which they carried away, commercial prosperity would have been in no wise impaired. And indeed they would have been themselves impelled by considerations of personal advantage, to conduct this trade upon the principles of the direct intercourse, had not their largest interests continued to be identified with those of another people.

The impulse given to northern enterprise by the causes just mentioned, was doubtless aided by others arising subsequently, and in some cases originating in the legislation of congress; but the committee regard those which they have just commented upon as first in importance, as in time. The exposition of their nature and of the mode of their operation, seems to indicate the means of relief. It is to draw back to us, as far as practicable, that foreign capital, the employment of which once was, and would again be, productive of internal advantage to the capitalist and to our-

selves. It is to enlist in our cause those who producing the articles that are designed for our consumption, have a common interest with ourselves in augmenting that consumption, by diminishing its charges. It is, in fine, to imitate the policy of New York herself, in procuring the establishment by foreign capitalists, of agencies in our ports, for selling the various articles with which they supply us, and purchasing those they receive in return.

Another, and one among the most effectual means of restoring the commerce of the state to its former healthy and flourishing condition, is the improvement of the channels of communication between the Atlantic border and the great West. How vastly this would increase the sum of our exports, and improve the demand for the merchandise imported into our own cities, must be apparent to all who consider with what facility a profitable trade with that immense region might be secured. Our natural advantages of climate and position would enable us, if not to engross, at least to participate largely in the benefits of an intercourse, which is now almost exclusively enjoyed by our more enterprising rivals.

The committee do not deem it necessary to enter into a detailed argument to show the beneficial effects of a liberal system of internal improvement, upon the commercial interests of the state, still less do they propose to discuss the merits of the various schemes which have been suggested from time to time. They leave this duty to the committee to whom this subject has been specially confided. Let it suffice to call attention to the happy results which have attended the adoption of such a system in other states; and to notice an objection that is not unfrequently heard, that the effect of this policy is to tax the general property for the advantage of a favored region. Few measures, of whatever nature, would ever receive the sanction of any legislative body, if their adoption were delayed until it could be ascertained, that the interests of every single individual would be promoted by them. If then it were even conceded that the costs of constructing works of improvement of the kind we have supposed would be partly borne by some, who could derive no benefit from their completion, the objection would only be one which may equally be urged against almost every measure of policy that can be devised. But can it be correctly said that the benefits of those great improvements by which distant sections of country, are, as it were, approximated to each other, and their wealth reciprocally received and imparted, are confined to those whose commodities are sped to their destination through the improved channels of communication? Is the application of steam to the purposes of navigation only advantageous to those whose merchandise is transported in the steam vessel? Are the great inventions of Whitney and Arkwright and Hargrave only beneficial to those whose cotton is submitted to the gin and to the spinning machine? Their happy effects are felt wherever civilisation extends. It is impossible to set limits to the results of those improvements, whether in the arts which produce, or in the means of effecting an exchange of production, by which human labor is abridged, and the wealth of every clime distributed throughout the world. How unfounded then is the objection we have noticed. We are ourselves, at this moment, reaping the advantage of the enterprise of other countries. There is hardly a canal, rail-road or turnpike in the most distinct section of the globe which does not, directly or remotely, advance the prosperity of Virginia.

The promotion of the great agricultural and manufacturing interests of the state, is intimately connected with the objects of this convention. As these important interests, however, have been especially entrusted to other committees, we forbear to say more in relation to them, than to express our sense of their magnitude.

The committee cannot conclude without congratulating the convention upon the bright auguries which are every where seen, of their final and complete success. The spirit which has been recently displayed in this commonwealth—nay, throughout the whole southern country, shows the intense interest felt by our people in the great cause of COMMERCIAL REGENERATION. Let it not be doubted that their acts will be correspondent with their resolutions. Already has one patriotic county, securing the proud distinction of being the first to strike for commercial independence, adopted measures which are in themselves the consummation of their purposes. But though *first*, it will not be *alone*. An example so worthy of imitation, cannot fail of its effect. From the sea-coast to the mountain range, its contagion will be spread, until it shall deprive of power, those who may still retain inclination to disregard its influence.

And is there no warrant for this expectation. Were it even necessary to achieve our object by voluntary sacrifices, have our people ever been remarkable for a disinclination to submit to them? Have they held at a cheap price the interest, the honor, the independence of the state? Have they forgotten their duty, when it might be irksome to perform it; and shall it be doubted that they will be equally mindful of their obligations, when private advantage, and national good conspire to direct their course?

What is it that is expected from them? That they will use the proper means to improve the advantages with which they have been so liberally supplied;—that they will augment the resources of their country—exalt its character, and increase its strength—that they will free their commerce from a taxation, which is not the less severe, that it is voluntary, and discharge a duty to themselves, which apart from all nobler considerations, every principle of selfishness would compel.

More than this will not be demanded—less cannot be expected. It is therefore with the most undoubting confidence, that we anticipate the ultimate triumph of our cause. The indulgence of such an expectation is surely no evidence of an over-sanguine temperament. Success indeed may be delayed. Time may roll on—difficulties may avert—indolence may dissuade and prejudice may revile. But of final success, let us be all assured. Success *must be* the prize of exertion; and exertion cannot flag, when there is so much to stimulate it, in private interest and the general good—in "self love and social"—in all our hopes of the future, and all our recollections of the past.

1. Resolved, That exchanges between nations of their commodities should be effected with the least possible delay and expense; and all other things being equal, that an indirect and circuitous transportation is mutually disadvantageous in subjecting the trade conducted through such channels

to charges and burdens which would be avoided by the establishment of a direct intercourse.

2. Resolved, That the trade by which the people of Virginia are supplied with those articles which they receive in exchange for the products of their industry is, for the most part, an indirect trade, being through the chief ports of the northern states; and that united and unremitted exertions should be made to restore the direct communication which was formerly productive of so much benefit.

3. Resolved, That this convention do recommend that immediate steps be taken to induce manufacturers and other capitalists in foreign countries to establish agencies from commercial connexions among us, in order that the goods exported by them to this country may be sent to their final destination, without being subjected to those expenses arising from intermediate agencies, which are injurious alike to the producer and the consumer.

4. Resolved, That the President appoint a committee of seven, whose duty it shall be, after the adjournment of the convention, to use all means which they may deem necessary and proper to secure the objects contemplated in the next preceding resolution.

5. Resolved, That this convention do recommend to all merchants and traders to give preference in procuring their supplies to the importers in the cities of Virginia and North Carolina, whenever they can be obtained upon as good terms as when purchased abroad; and that the banks of these two states be requested to co-operate with the views of the convention.

6. Resolved, That with a view to the efficient employment of such of our surplus capital as is not invested in commercial pursuits, and to the encouragement of those persons, who with industry and intelligence, are prevented by want of means from engaging in mercantile operations, this convention do earnestly recommend the formation of limited partnerships under the act recently passed by the legislature of Virginia.

7. Resolved, That it be recommended to the importers and exporters of Virginia and North Carolina, to give the preference to vessels belonging to these two states, when the freights can be obtained on terms equally advantageous.

Report of the Committee on Agriculture.

The duty assigned to the committee on agriculture was so suddenly and unexpectedly imposed, that there can be little confidence entertained in its being properly or acceptably discharged. The performance of the duty is therefore attempted with reluctance; and no effort would have been made, but for the respect due to the commands of this convention. It is not that there are not abundant and weighty materials, both of facts and of argument, for a report on this subject, and which might demonstrate the importance of the improvement of agriculture to the commercial and general interests of Virginia, and the necessity for legislative aid being asked, and granted, to promote such improvement. But as your committee are instructed and called upon forthwith to act, without access to authorities on agricultural statistics, or any other materials that would need reference and examination, they are sensible that they can as little do justice to the subject, as they can hope, in this or any better manner, to exert influence on the legislation of the state for the benefit of agriculture.

Besides these difficulties, your committee are at some loss to know the precise kind of inquiry and labor required of them, by the very concise and general terms of the resolution, which directs the formation and action of the committee. And even if they should not mistake the direction of their duty, they may err by overstepping its proper limits. The interests and the claims of agriculture are even more important than any and all others that this body will endeavor to aid; but still your committee must bear in mind that the primary and main design of this convention is to re-establish the commerce of Virginia; and that other objects and interests, however important in other respects, should *here* be treated as merely subsidiary to, or in connexion with, the commercial business and interest of the country.

Whatever can be done to aid the commerce, the manufactures, the canals and railways of the country, in a legitimate and proper manner, will operate to increase the profits, and thereby encourage the improvement of agriculture. Still more truly, because admitting of no exception, may it be affirmed, that whatever will extend the knowledge, and promote the improvement of agriculture, will, in proportion to that direct effect produced, also act indirectly to improve the commercial and manufacturing interests of the country. Neither of these truisms need more than to be announced. From such premises, it follows that the promotion of agricultural instruction and improvement are proper subjects for the notice and favor of this convention, as an important mean for advancing the interests of commerce, the especial object of the assembling of this body. And even on this ground, though it be far less important than others, (which would be out of place if presented *here*,) there would be found sufficient reasons for the legislature to extend to agriculture that fostering care which, by a narrow and niggardly policy, has heretofore been refused.

When aid to agricultural improvement was asked at several of the recent sessions of the legislature of Virginia, the claim was but feebly sustained by its friends, and met with neglect or derision and contempt from all others. The former were at a loss to determine what particular measures of relief to propose, or support; and the latter class have deemed it a sufficient answer to *misapply* the old saying of "*laissez-nous faire*," declaring that the best thing for agriculture is "to let it alone." Your committee claim to be as true disciples of the free trade school of political economy, as those who thus misapply and abuse this doctrine; and they fully concur in the propriety of leaving all pursuits of industry untrammelled by legislative burdens, and unaided by legislative bounties, to their own direction and their own rewards. But agriculture does not want, nor have its advocates asked for, any pecuniary or other support, except for the purpose of diffusing knowledge, and to induce and extend instruction; and this your committee maintain to be one of the few legitimate and proper subjects for governmental action, even according to the most strict doctrine and limitation of sound political economy. If it be pronounced to be proper that the government should refuse to aid in diffusing light and instruc-

tion in agriculture, as a correct deduction from the "let alone" policy, then it is no less necessary that it should abandon, as a matter of principle and consistency, the giving of all or any aid to primary schools and to colleges, for the purpose of literary instruction and education in general.

It would be more difficult within the narrow bounds prescribed by propriety to this report, to answer the friends, than the enemies to the improvement of agriculture by legislative action. In reply to their inquiry, "what can the legislature do to improve agriculture?" your committee will merely state, in general terms, that every means will be useful and profitable, by which light and knowledge will be diffused; and that no other action, no other aid, or boon, is desirable, or would be beneficial. There are so many valuable modes of diffusing agricultural knowledge, that the difficulty is not to find, but to choose among them. Boards of agriculture, agricultural societies and premiums upon a suitable and judicious plan, agricultural schools and experimental farms, and agricultural surveys and publications, each and all, elsewhere have worked admirably to forward the great end in view. But if no more were done at first by legislative action, than the institution of a board of agriculture, as merely an investigating, consulting and advising body, incalculable benefit might be expected to grow out of this one and cheap mode. Such a board (if the system of furnishing aid should go no farther,) might be limited in annual expense to $1500—or barely more than the General Assembly has spent, year after year, merely in the time used for electing an individual to execute the mechanical business of printing their journal and documents—less than the expense of time and money, caused by each single elaborate speech, delivered in that body upon federal relations—not one-fourth part of the annual expense of the geological survey—and perhaps not one-hundredth part of the money wasted in every session in useless or worse than useless debate.

With these views, and in the earnest hope that the recommendation of this highly respectable convention may have more influence on the legislature than any previous expressions of opinion, or petitions, of separate or private individuals, to induce the commencement of the great work of diffusing agricultural instruction and improvement, your committee recommend for the adoption of this convention, the following resolution:

Resolved, as the opinion of this convention, that the commercial and general interest of Virginia and North Carolina, as well as the peculiar interests of the agricultural class, require that legislative aid should be given, promptly and effectually, to the diffusion of agricultural instruction and knowledge, and to the promotion of agricultural improvement.

The foregoing resolution was adopted unanimously; and then the following was moved and adopted:

Resolved, That a committee of five be appointed to wait on the legislature of Virginia, in order to obtain from that body such aid as the agricultural interest of Virginia may require, and that a committee of five be also appointed to wait on the legislature of North Carolina for the like purpose.

Report of the Committee on Banking Capital.

The committee on banks submitted the following report:

At an early period, when bank capital in any part of the Union was small, the southern states enjoyed a large and profitable import trade. They made their exports directly to foreign markets, and in return imported whatever they needed of foreign fabrics. Then, if southern staples were proposed to be purchased on foreign account, or exportations to the states were made by foreign capitalists, the operation was not, as it now is, almost exclusively through northern agency, but in either case the intercourse was immediately and directly with the south. The south did not need any intermediate intercourse with foreign markets; possessing in the number and value of her agricultural staples the elements of foreign trade, and in this respect enjoying advantages over the north, she was her own factor; and her commercial prosperity, and as that involves almost every internal interest, her domestic welfare, were not liable to be affected by the vicissitudes which might occur in the markets of the east or north. An extraordinary change has occurred in the foreign commerce of the country—a change which exhibits the south in the attitude of dependence on the north for the supply of her demand of foreign goods, and what is alike remarkable, for the sale, to a mortifying extent, of her staples, intended for foreign consumption.

The change commenced about the time that the north decided in favor of a policy, which she has ever since steadily encouraged, to her manifest and great benefit, but of which the south was reluctant to avail herself, and has not yet profited by, as she should. That policy is the banking system, and to its powerful agency, as the north has applied it, may be ascribed, in a great degree, her commercial ascendency.

The effect of this policy in concentrating at New York, where it has been appealed to with equal judgment and vigor, a large portion of the entire business of the whole country is obvious. It gave her capital, and capital was alone wanted to secure commercial success. The effect of establishing banks was first to bring together, for commercial purposes, the money of those who should subscribe to its stock, and secondly, to render capital so raised, capable of performing the office of a far greater amount distributed among individuals. As then, an individual of large capital, is an unequal competitor with one of small, so a state or city, which brings to any branch of commerce the advantages of ample means and extended credit, must obtain the superiority of one less favored in these particulars.

By means of her banks, and their large capitals, New York has presented a market in which every commodity may be sold, and in which there is no danger of an overstock by the accumulation of commodities. She has not been under the necessity of restraining her dealings in the products of our own, or of foreign commodities, to some small advance on the actual private capital employed in trade; but has been encouraged to enter largely into whatsoever attracted commercial enterprise, by having it in her power to substitute credit for capital. So far is she in advance of the south, in all the facilities which are essential to commercial

activity, that for the want of like facilities, many of our enterprising citizens, of no inconsiderable private fortunes, go thither to profit by advantages denied to them at home.

Your committee do not refer to the commercial ascendency of New York, and to the influence of her bank capital in building up and sustaining it, in any spirit of jealousy or complaint; on the contrary, their object is to direct public attention to what they regard as a valuable and powerful agent in her policy, in the hope that it may lead to more enlightened and liberal opinions among us.

If there be those who would seek for an explanation of northern commercial ascendency in other causes than the one to which the committee has referred, none, it is presumed, can question that it has been an efficient auxiliary. To doubt it, would be to question the connexion between commerce and credit, which the experience, not of this country only, but of the whole world, has ascertained to be inseparable. The inevitable tendency of commerce is to those points where credit may be obtained with the least discouragement, and upon advantageous terms; and without credit, commerce cannot rise far above simple barter, and merchants have neither inducements nor space for their vocation.

It would have been desirable to annex to this report, a table, showing the bank capitals of the great cities of the north and east, and in comparison, the small and inconsiderable capitals of Virginia and North Carolina. This has been omitted for the want of documents from which to compile it. The fact is however notorious, that there is not a point in any part of our country distinguished for commercial activity, which does not possess, in an eminent degree, all the facilities for banking; whilst the bank capital of this state and of North Carolina, has been, and is, not only relatively, but absolutely small, and wholly inadequate to their vast capabilities, and the exigencies of trade.

The legislature of this state, at the session of 1837, authorized an addition to the bank capital, which has been in part only so far realised. The law in respect to a part of this increase has been suspended; and if it should be the pleasure of the legislature at an early day, again to bring the important subject under review, which is most earnestly and respectfully recommended, it is hoped that the terms may be so settled as to attract subscriptions from abroad. The true policy being to recommend her institutions by relieving them from onerous and unnecessary restrictions whilst provisions be made against the abuse and perversion of their powers.

Resolved, as the opinion of this convention, That an increase of banking capital upon principles so liberal as to attract capital from abroad as well as at home, is necessary and indispensable to aid our manufacturers in granting to the southern merchants the same credits that are granted elsewhere, and without which extended credits all the natural and local advantages which enable us to be eminently successful in competition with our northern brethren, are either neutralized, or materially impaired.

Report of the Committee on Manufactures.

The committee very much regret that the necessity for despatch, denies them the opportunity of fulfilling their duties as they would desire. They labor under the further disadvantage of having no precise information in respect to several important points, where many branches of manufactures have been in successful operation upon a large and constantly increasing scale. They are in a measure compelled to limit themselves to an exhibition of the manufacturing condition of one place only. But for this, their apology is, that they have been furnished with no statements from other places. For this, however, there is less cause for regret, as it may be safely concluded of the entire manufacturing interest of the state, that it will advance and flourish, under the same common influence; and that, hitherto, wherever it has been industriously and prudently conducted, it has yielded an adequate return for the capital invested, and made valuable additions to the resources of the state.

The aggregate amount of capital of the several companies of Petersburg engaged in the manufacture of cotton is $772,000. There are 20,000 spindles and 670 looms, requiring 5500 bales of cotton annually. The operatives employed are 1000, whose wages exceed $130,000 per annum. For the machinery and lights, they consume about 5,000 gallons of oil, and for sizing about 1000 barrels of flour. The product is about 3,950,000 yards of cloth and 530,000 lbs. of yarns. Accompanying this report is a table showing the capital of each company, the extent of its business, &c., and by it will be seen that the dividends of two of the companies for the first six months of the present year have been 10 per cent., and of a third company 13 per cent. on its capital. The other companies having been but recently put into operation, have as yet declared no dividends. The dividends of past years have seldom (if ever) fallen under 15 per cent. per annum, and have generally reached beyond 20 per cent. This is an encouraging view of this branch of industry; it has been in existence about ten years, beginning under many discouragements; but showing as it has advanced, its capacity to sustain itself and to reach a state of yet higher and more extended usefulness. And it is obvious to remark, just as it progresses it will elevate the south from the condition of dependence on the industry of the north and east, and furnish the direct and indirect elements of foreign commerce. Whatever therefore tends to encourage cotton manufactures, and for like reasons, whatever tends to encourage all other branches of manufacturing interest, comes directly in aid of the objects of this convention.

Although these manufactories have continued gradually to increase, and we believe the same may be said of all the cotton manufactories of Virginia, yet they have been laboring under *one* great and serious disadvantage, which operates alike upon all the manufactures of the state, whether individuals or incorporated companies; namely, the want of sufficient banking capital, or the application of a portion of that in a different channel, so that the manufacturer who is compelled to pay cash for the raw material and sell on credit may be enabled to reduce into *cash* the paper for which he sells his goods. We believe that the cotton

manufacturers throughout the state, agree that, were this want supplied, they have nothing more to ask and nothing to fear from the entire repeal of all protective duties; and still less from any competition with our northern brethren.

The northern manufacturers owing to their liberal system of credits, are enabled to sell their goods on a credit of 8 months, and immediately to have the paper cashed for which they were sold; and thus the southern merchant, who must necessarily sell on a long credit at home, is tempted to buy at the north even at higher prices, and certainly in larger quantities.

The manufacturers of the south having been enabled to succeed thus far, are not the less to expect all the countenance and support from the people and the legislature which can be granted without detriment to, and indeed in common with, the other great interests of the commonwealth.

All that is asked, is to enable them to cash their sales made at 6 to 8 months' time. This granted, and their march is onward; instead of 20 per cent. per annum upon *thousands*, they would make like dividends upon *millions*, and the wealth thus created would presently become a ready and powerful auxiliary to internal improvements, and to all the great interests of the commonwealth.

Your committee conclude this very hasty and imperfect report by a single resolution as follows:

Resolved, as the opinion of this convention that an increase of banking capital upon principles so liberal as to attract capital from abroad as well as at home is necessary and indispensable to aid our manufacturers in granting to the southern merchants the same credits that are granted elsewhere, and without which extended credits all the natural and local advantages, which enable us to be eminently successful in competition with our northern brethren, are either neutralized or materially impaired.

Addenda.

Statistics of the cotton manufactories of Petersburg.

Petersburg Manufacturing Company, incorporated in 1828, capital $120,000; operates 4000 spindles and 106 looms; consumes about 1600 bales cotton annually, when in full operation, 450,000 lbs. of which is sold in the form of yarns, and the balance wove into cloth; employs 200 hands, whose wages amount to more than $25,000 annually.

Last dividend for six months 10 per cent.

Merchant's Manufacturing Company, incorporated in 1832 capital $15,000, operates 4000 spindles and 112 looms; consumes about 1400 bales cotton annually, which produces about 800,000 yards of heavy cloth, besides about 70,000 lbs. sold as yarns; employs about 200 hands, pays more than $25,000 per annum wages.

Last dividend for six months 13 per cent.

Matoaca Manufacturing Company, incorporated in 1835, capital $150,000; operates 4000 spindles and 152 looms; consumes about 800 bales cotton annually, which produces about 850,000 yards cloth; employs 200 hands.

Last dividend for six months 10 per cent.

This company also have a paper mill, capital $75,000; employing at present 30 hands and will very soon employ 30 more.

Ettrick Manufacturing Company, incorporated in 1838, capital $152,000; operates 4000 spindles and 146 looms; consumes about 1,000 bales cotton annually, which produces about 1,000,000 yards cloth; employs 200 hands. But lately gone into operation, and have not yet declared a dividend.

Mechanics' Manufacturing Company, incorporated in 1838, capital $125,000; operates 4000 spindles and 154 looms; will consume when in full operation about 700 bales cotton annually, which will produce 1,000,000 yards cloth; employs 180 hands. But lately gone into operation and has not declared a dividend.

Recapitulation: the whole amount of capital is $772,000; operates 20,000 spindles and 670 looms; consumes 5,500 bales cotton annually, which produce about 3,950,000 yards of cloth and 530,000 lbs. of yarns; employs 1000 hands, whose wages exceeed $130,000. Consumes for machinery and lights, about 5,000 gallons of oil and 1000 barrels flour for sizing.

From the Genesee Farmer.

PRESERVATION OF THE POTATO.

One can form something of an estimate how extensively the potato enters into use as an article of food among the American people, from the complaints we hear from all parts of the country, or at least with very few exceptions, of the partial failure of that crop the present season. We frequently hear people when instituting a comparison between that root and bread, declare they would sooner part with their wheat bread, than with their potato; and these are not the poorer classes, but respectable wealthy people. Now, though we do not carry our affection to this esculent as far as this, yet we are "free to acknowledge" that a good potato is a good thing, and an inferior one, the worst of bad things. An unripe or defective potato, is one of the most indigestible and unwholesome kinds of aliments that can be taken into the stomach, if indeed there is any aliment about it at all; and from the specimens we have seen at numerous tables this year, we have no doubt that many of the cases of illness that have been charged upon hot weather, bad water, *malaria*, and a variety of other things, are justly due to the swallowing potatoes as hard and as heavy, as well as about the size of ounce balls.

The potato, in its original uncultivated state, is decidedly poisonous; and whenever it is used in an imperfect or unripe state, the result is not widely different now. Owing most likely to the hot dry weather, potatoes, this year, are generally of an inferior quality, and hence more pains and care should be taken in selecting those intended for food, and greater attention paid to preserving them, than in years like the last, when among thousands of bushels there was scarcely a defective one. Ireland, on the other side of the Atlantic, and Nova Scotia on this side, are the most celebrated for the excellence of their potatoes, and both have a temperature comparatively low, and an atmosphere moist and humid. If such a climate and temperature is required for the perfection of this root, will not the hot weather we have had the present year, account most satisfactorily for its

little value, and also show why its growth is impossible in our more southern states, or still nearer the equinox.

Potatoes almost instinctively shun the light and air. These things so indispensable to the perfection of many other things, are most injurious to the potato, and the grand secret of its preservation lies in the most perfect exclusion of these silent but active agents. To perceive the difference between roots exposed, and those secluded, we have only to take one which has grown partially above ground, and one that has ripened in its proper place. The one will be green on the exterior, hard, heavy, and bitter in the interior, while the other will be of the natural color, farinaceous, and fine flavored. Farmers should take lessons from these facts, and conform their practice to the teachings of nature. In England and Scotland, where most serious complaints have arisen from the failures of the planted tubers, it is acknowledged by all, that roots which are allowed to remain in the ground during the winter never fail of vegetating, and that those secured by pitting are more likely to succeed than those put into cellars, and thus partially exposed to light and air.

The most common method of preserving potatoes is to put them into bins in the cellar, where they are left without any covering or other preparation, and used as wanted. It is also customary to get in as little dirt with them as possible, and one standard of good farming has been the clean state of a farmer's potatoes when deposited in his cellar. For the reasons given above, and from our own experience, we think both these modes of securing potatoes, or preparing them, erroneous. If put into bins, they should be covered as closely as possible from light and air; and if there is dirt enough thrown into the bin to completely fill all the interstices between them, so much the better for the roots. It has been recommended by some potato growers, and the practice is founded in reason, to line the sides of the bins with turf, the lower sides placed inwards, and when the bin was filled, to cover it closely in the same way, and with the same material.

Owing to the severity of our winters, potatoes cannot be allowed to remain where they grow; else their mealiness and freshness would be much increased by allowing those that are to be used the coming season to remain where they are till the spring opens. Since this cannot be, the method of preservation that approaches the nearest to this will be found the best, and this method doubtless is pitting, or as most of our farmers term it, burying in holes in the field. In burying in this way care should be taken not to put too many in a pit, or, in other words, not make the heaps too large. Twenty or twenty-five bushels is quite enough; and some prefer even a smaller number. The cone should be regular so as to be covered equally. The covering of straw and earth first put on should not be too thick, as otherwise the roots will heat, and be injured: but at the latest period allowable, the thickness of the covering should be increased so as effectually to prevent freezing. In covering potatoes in the fall, it should be remembered that the great object of the first covering, is simply to exclude air and light, and preserve them from rain or unfavorable weather, and the last covering is the one to be relied on as a defence against the frost. If the roots are dug and pitted immediately, without unnecessary exposure, and if the ground and the process of covering is properly selected and performed, the potatoes will come out in the spring, in excellent order rather improved than deteriorated by their winter's keeping.

Farmers who are in the habit of making their pork from potatoes, or feeding them extensively to their stock, will undoubtedly see the propriety from the present high prices, of sorting their roots more carefully than they have hitherto done, in order to sell, or preserve, as many as possible. The apprehended scarcity of this root will also prompt to this course; and should induce all to adopt the best and most effectual measures to preserve through the winter uninjured, or, if possible, improved, this root on which so many rely for sustenance.

THE CORN AND SMALLER CROPS OF NANSEMOND COUNTY.

To the Editor of the Farmers' Register.

Clifton, Nansemond Co. Nov. 15, 1838.

I have had it in contemplation for several weeks to address you a few lines, on the state of the crops of our county; but delayed doing so, until this time, so as to be able to ascertain more certainly and distinctly their real state and condition. We are generally very apt to over-estimate our crops; it is not safe, therefore, to judge them until they are got in, when something like certainty may be arrived at. The corn crop (the staple of our county) has been housed, or nearly so; and from the best information I can get, after diligent inquiry of the most intelligent of our farmers, and from my own personal observation, I think I may safely say that it is fully, if not over an average one. The prospect at one period was exceedingly gloomy and unpromising; but, thanks to the Author of all good, our dismal forebodings have been scattered to the winds.

The *truck* crops of the river farms have also yielded well, and sold well. I cannot say, however, that the sweet-potato, which may be justly ranked next in importance to the corn crop, has been altogether as productive as in former years; but, considering all things, it has been a fair yield, and is generally a source of much revenue to the county. It comes, too, at a very convenient time, to pay taxes, and to keep the sheriff at a respectable distance.

It has been estimated by competent judges, that the refuse, or, if I may be allowed the expression, the offal of an acre of suitable land, well cultivated in sweet potatoes, is worth as much as the same quantity of land would produce in corn—an acre of good and suitable land will make, in a tolerable season, one hundred and twenty bushels *marketable* potatoes, which, at fifty cents per bushel, (and for two years the price has ranged from fifty-five to seventy-five cents,) would be sixty dollars—certainly a very handsome profit, admitting the refuse or offal part of the crop to be as valuable as supposed.

The water-melon crop is also entitled to a passing notice. It is one that is easily cultivated, quick over, often very profitable, and has been particularly so this year. A gentleman told me that he

sold from twelve acres of land *seven hundred and fifty dollars* worth; and I think it very probable that others did equally as well, if not better.

Cotton as a sale crop has been almost abandoned in our county. The low price and the unsuitableness of our climate to its production, I have no doubt, will ultimately drive it back to the more genial and sunny regions of the south.

It may probably excite the risible faculties of the large wheat growers and tobacco planters of the upper regions of our country, to hear us lowlanders prating about our sweet potatoes, watermelons, and other small matters; but whilst we are permitted to enjoy the valuable profits arising from their culture, and the oysters to boot, they are perfectly welcome to the full benefit of the laugh.

When I commenced this letter, I did not design to go further than simply to give you a statement of the condition of our crops; but having a little space left, I will say a few words more. The science of agriculture, the natural employment of man, seems to be making rapid strides towards improvement in many parts of our country, and I hope I may (without the imputation of boasting,) be permitted to say, that few regions are more alive to the great improvements of the age than the county of Nansemond. Her citizens, after slumbering for ages, over almost unrivalled advantages, have at last roused up from their lethargy, and seem disposed to appreciate and to profit by the many advantages that surround them. With a climate mild and temperate, a tolerably good soil, and a vast abundance of all the elements necessary to make it permanently rich and fertile, and a convenient and ready market for every species of produce, down to the very smallest article, surely, her citizens have every inducement to "go ahead" in that career of improvement, which is abroad in the land.

We have established an agricultural society, in the neighborhood of Chuckatuck, and placed at its head one of our most intelligent and enterprising farmers. It is the first society of the kind that ever had existence in our county. They are generally the harbingers of improvement and usefulness, by the rivalry which they excite and the valuable information which they collect and disseminate. JOSHUA M. HARRELL.

[We entirely agree with our correspondent in his high estimation of the advantages of the lands of Nansemond. We have long entertained the opinion, that if a single preliminary improvement were made, these lands would be among the best situated in the U. States, for desirable residence, for the enjoyment of all the comforts and many of the luxuries of life—for agricultural profit—and particularly for increasing that profit by cheap fertilization. The one great improvement which we deem so desirable, is to cut every mill-dam, and dry every mill-pond in the county and its vicinity. That one improvement, by adding to health, physical power, and happiness, would double the value and the income of the lands, and even make meal itself cheaper, by increasing the corn.—ED. FAR. REG.

From the Silk Grower.

SILK-CULTURE.

Messrs. Editors—The worms of my second feeding have just done winding. They are the two crop variety, and were produced from worms fed in the early part of the season, exclusively on the white or Italian mulberry, of four or five summers' growth. They did well, but the expense and trouble of collecting leaves was great, and the cocoons small. But my second crop, as before stated, the product of these first worms, fed entirely on the morus multicaulis, of but one summer's growth, and made cocoons a third, or at least a fourth larger, and more in proportion to the worms hatched. Their being longer going through the various stages, was owing to the late cool weather.

After my first crop of worms had deposited their eggs, I removed them to an ice-house, which is necessary only to produce simultaneous hatching. In a few days they were brought out to the warm air, and as the young ones came they were separated from the eggs, and removed to the feeding shelves, by means of leaves cut in small strips, to which they immediately adhered. In this way each day's hatching may be removed to the shelves allotted them, and kept separate with great facility. The advantage of keeping the worms of each day's hatching by themselves, is great. After being removed, they are suffered to feed on the shelves for a week or ten days, after which hurdles of netting are placing above them, over which fresh leaves are sprinkled, to which they immediately attach themselves, if done in the morning, or when they have eaten their previous food. After this they are regularly cleaned, by means of the hurdle, each succeeding day until they commence rising. As far as my experience extends, I can say that the worm appears to prefer this leaf to all others, is less liable to disease, grows larger, and produces larger cocoons. JAMES B. HOOPER.

Allentown, N. J., Oct. 6, 1838.

From the Silk Grower.

REMOVING MULBERRY TREES.

Mulberry trees which are to be taken out of the ground before winter can be ploughed up easily and expeditiously. Attach two horses to the plough, one before the other; turn a furrow from one side of the row of trees, then run the plough on the opposite side under the roots. They can then be removed by the hands without injury to the plant. Ten thousand can be taken up in this way in an hour.

From the Maine Farmer.

SOUP.

Soup is one of the cheapest, and, to some palates, the most agreeable dish that can be set upon a table, and the following is the most convenient way of preparing it we know of. After taking your meat, potatoes and cabbage from the pot, put into the liquor a little thickening of meal or flour, previously stirred up in cold water, and let

it boil up, and you have a soup that is superior to the best French cookery. It is a great waste to throw away the liquor in which meat and vegetables have been boiled.

For the Farmers' Register.

MONTHLY COMMERCIAL REPORT.

Markets have undergone little change during the month. Wheat and flour command nearly the same prices as in October. The former 1,55 to 1,70 per bushel; the latter 8 to 8,25 per barrel. The averages of wheat in England continued to decline, until the duty reached nearly 22 shillings per quarter, but at latest dates prices were again advancing; and during the winter, whilst the Baltic is closed by ice, it is probable the stoppage of supplies from thence may cause the duty to recede again to its minimum. The receipts of flour at New York from the west have been about the same as last year; but these will now cease until the spring, when the supply will be very large. Indian corn has fallen to 90 cts. per bushel. Tobacco continued to advance in England until the price reached 6d. to 12d.—embracing common leaf to fine strips; and in our markets, prices range from $7 to $16—including inferior lugs to good stemmed. Scarcely any of the old crop remains to be brought to market; and the receipts of new are confined chiefly to primings and suckers. The high price inducing the planters to save what has generally been worthless.

The new cotton of Virginia and North Carolina is of inferior quality, and the quantity far short of an average crop; it sells at 10 to 11½ cts., while old commands 11 to 12½ cts. Prices abroad are well sustained, considering the great increase of supply. Few droves of hogs have arrived; and the price is $9,50 to $10 per 100 lbs. Exchange on London 9½ to 10 premium. X.

Nov. 28, 1838.

PLANTING FRUIT TREES.

From the Maine Farmer.

It should be remembered that the proper time for planting fruit seeds and nuts of all kinds is the fall, or at any rate the seeds should be suffered to freeze in the ground during the winter. The action of the frost cracks the hard shell and gives the sprout an opportunity to grow. It is sometimes the case that the frost is not sufficiently severe to crack the shell of hard nuts, such as walnuts, oilnuts peach stones, &c. In such case they should be taken up in the spring and the shell cracked, care being taken not to bruise or injure the meat, and then plant them where your wish them to remain.

Table of Contents of Farmers' Register, No. 9, Vol. VI.

ORIGINAL COMMUNICATIONS.

	Page
Treatise on the culture of silk (No. 3 and last)	513
The comparative unfitness of the northern states for the morus multicaulis	521
Some of the blessings of emigrating to the north-western states	521
Address to the Agricultural Society of Cumberland	535
Address to the Agricultural Society of Rockbridge	538
Rough field-notes, No. I.	554
Curious extracts from the ancient laws of Virginia, with remarks	558
Unrotted leaves as manure	563
Singular and fatal disease of horses	563
A suggestion for improving chimneys	564
The Norfolk Commercial Convention, and its proceedings	565
The corn and smaller crops of Nansemond	574
Monthly commercial report	576
To correspondents	576

SELECTIONS.

On building and filling ice-houses	516
The forests of America	518
Indian rubber, or Caoutchouc	520
Antiseptic property of honey	520
Notice of Joyce's apparatus for heating by steam	520
Agricultural societies and cattle shows	522
Cursory remarks on East Florida in 1838	524
The milk-sickness, or puking complaint of the west	533
Spanish cheese pumpkin	542
Premiums awarded by the Agricultural Society of Albemarle	543
Glander's communicated from a horse to a man	543
Sinking of drained swamp land	544
Comparative expense of oxen and horses	545
Fish as manure	546
Sheep husbandry of R. K. Meade, dec.	546
Directions for making compost manure of peat, by Lord Meadowbank	548
Construction and filling of ice-houses	550
Essay on the proper size of farms	551
Cleaning neat cattle	556
Kentucky cattle	557
Silk-culture	557
Preservation of the potato	573
Silk Culture	575
Removing mulberry trees	575
Soup	575
Planting fruit trees	576